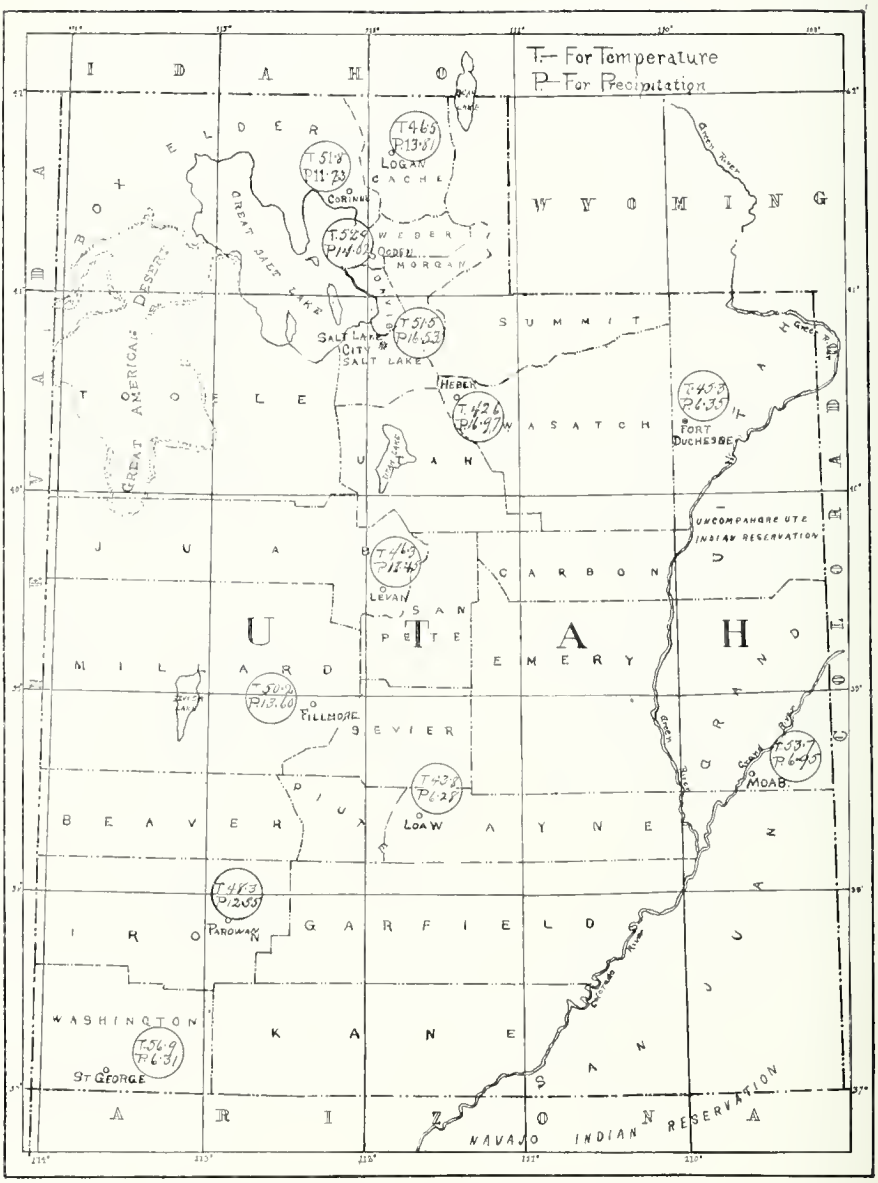


CHART 1.—Showing average annual temperature and precipitation in Utah at twelve different points.

BULLETIN NO. 47.

THE CLIMATE OF UTAH.

JAMES DRYDEN.

In reporting the meteorological observations of the Station for the years 1895 and 1896, it has been thought well to include for purposes of comparison records of temperature and precipitation at several other Utah points, as well as other data of climatological importance. The bringing together of all the known facts of our climate is a work of necessity that has been too long neglected. Observers have been patiently collecting data, some of them for a quarter of a century or more, and of the mass that has been collected very little is known outside of the periodical records of the Weather Bureau at Washington, where it can be of little practical advantage to the people of the state. These observations have now certainly continued long enough to make them of scientific value, and the work entailed in the preparation of this bulletin was undertaken with the object of rendering them more easily accessible.

The importance of climate is fully appreciated by the different Experiment Stations of the country. Agricultural experiments along certain lines which do not take into account the local conditions of climate, have little scientific value, and this has led those Stations to keep systematic records of the weather, more especially of temperature and precipitation. It is important that the farmer in other

districts in studying the experiments conducted on the Station farm should know under what conditions of temperature, precipitation, wind velocity, etc., the experiments were conducted. It is also important that he should know, though he frequently does not, the climatic conditions of his own locality in order that he may be able to make, in studying the experiments of his own state Station and of other Stations, proper corrections for climatic variations.

Utah has little to fear and much to gain from a full discussion of the known facts in relation to her climate. In the first place, climate is so closely connected with agriculture that it is one of the first considerations of the intending settler or investor, and there is no publication in Utah that gives this information for the different sections of the state. The records embodied in this bulletin have been compiled with the view of furnishing this information in brief form. Then, owing to climatic conditions, sections of the state are unexcelled, in many respects, as health resorts; and it is believed that the data given herein, will be of interest and value to those people in other states who are interested in the subject; though with the meteorological data at hand it is not possible to make a study of the climatology of Utah in all its phases. Outside of observations at Salt Lake City, Logan, and Corinne, there have been no hygrometer observations made, and, of course, any discussion of our climate must necessarily be incomplete which does not take into account the distinctive feature of the dryness of our atmosphere. So, likewise, there is an absence of observations on air pressure. Outside of Salt Lake City there have been no systematic records kept of wind velocity, sunshine, and cloudiness, and these, in many respects, are highly important factors. But of temperature and precipitation—the two first practical considerations of climate—the data are extensive enough and accurate enough for all practical purposes for the different sections of the state.

The making of weather observations in this state, as in other states, is under the supervision of the Weather Bureau of the Department of Agriculture at Washington, for-

merly of the War Department. There are now some forty weather stations in Utah, each equipped with maximum and minimum thermometers and a rain guage. They are accurate instruments, tested by the Weather Bureau before being sent out. They are what are called self-registering: that is, the maximum thermometer registers the warmest temperature of the day, and the minimum the coldest, and they remain at the extreme points until read and re-adjusted. They are read each day, so that a continuous record is kept at each station of the lowest and highest temperature for each day of the year. The difference between the highest and lowest, or between the maximum and minimum temperature of the day, constitutes the daily range of temperature. The average of the two gives the mean temperature of the day. The average of the daily maximum and minimum temperatures for the month, gives the mean temperature; the difference between the highest and the lowest temperature during the month, gives the monthly range of temperature. At the end of the year we obtain the annual mean temperature, the monthly and daily mean temperature, the daily, monthly, and yearly range of temperature.

The rain-gauge measures the precipitation, whether in the form of rain or snow. The gauge consists of three parts, a receiver, an overflow attachment and a measuring tube. The measuring tube is a brass recepticle 2.53 inches in diameter, and 20 inches in height, inside of a larger galvanized iron vessel having a receiver at the top which conducts the water into the measuring tube. If the rainfall in the measuring tube measures one inch it means that one-tenth of an inch of rain has fallen, the depth of the rainfall being magnified ten times in the measuring tube. The snowfall is melted and measured as so much water, and the whole called precipitation. In this way an accurate record of moisture precipitation at several Utah points has been kept for the past twenty years or more, and though the precipitation varies considerably from month to month and from year to year, the averages of all the years and of all

the separate months afford a fairly accurate estimate of what we may expect each year and each month of the year. It is the same in the case of temperature; it is only from the average of a long series of observations that an accurate opinion may be formed of the temperature of a locality.

OBSERVATIONS AT THE EXPERIMENT STATION, 1895.

The following table gives the daily maximum and minimum temperature and daily range for each month of the year 1895. The mean maximum, mean minimum, and mean range for the months are given at the bottom of the table.

The temperature records for previous years, and including 1896, together with the average, will be found further on in table No. 8.

Table No. 1.

Maximum and Minimum Temperature and Range, 1895.

	January.			February.			March.			April.			May.			June.		
	Highest.	Lowest	Range.	Highest.	Lowest	Range.	Highest.	Lowest	Range.	Highest.	Lowest	Range.	Highest.	Lowest	Range.	Highest.	Lowest	Range.
1	33	20	13	29	13	16	32.5	17	15.5				57.5	44	13.5	57.5	36	21.5
2	30			37	23	14	48	17.5	30.5	56			57	42.5	14.5	63	39	24
3	46	26	20	44	27	17	37	21	16	55	36	19	55	39	16	66	40	20
4	40 5	35	5.5	37	23	14	41.5	30	11.5	60	36	24	53	43	10	72.5	45	27 5
5	34	29	5	32	8.5	23.5	35	16	19	52	40	12	62.5	43.5	19	79	49.5	29.5
6	30			42.5	23	19.5	39	15	24	36	20	16	72	46	26	66	46	20
7	19	8	11	32	10	22	38	17.5	20.5	44	19	25	78	47	31	55.5	37	18.5
8	14	-1	15	28	10	18	40	17	23	65	28	37	72	49	23	58.5	36	22.5
9	34	10	24	25	16	9		18.5		63	40	23	54	40	14	57	38	19
10	32	14	18	20	10	10		20		66	37	29	58	33	25	66	39	27
11	23.5	4	19.5	13	-4	17	48			61	37	24	67.5	38	29.5	72	43	29
12	35	9	16	9	-10.5	19.5	55	26.5	28.5	69	36	33	72	43	29	79.7	48	31.7
13	42			25	4	21	34	23	11	74.1	36	38.1	79.5	47	32.5	79.5		
14	34	2.2	31.8	19			28	12	16	69.5			76	52	24	78	53	28
15	22	11	11	13	16.5	29.5	32	13	19	56	31	25	70.5	49	21.5	67	39.5	28.5
16	24	11	13	13.5	-14	27.5	39	20.5	18.5	65	36	29	65	42.5	23.5	60.5		
17	41	18	23	29	11	18				68	40.5	28.5	70	43	27	62	32	30
18	39	29	10	40						67	42	25	76.5	41	35.5	68	39	29
19	40	32	8	37	23	14	42			71	39	32	77	54	23	72	46	26
20				40	22	18	57	32	25	59	42.5	16.5	74	51	23	78	49.5	28.5
21	36			44	26	18	40	23	17				72	46	26	82	52	30
22	23	8	15	43	23.5	19.5	32	28	4	68	33	35	66	42	24	84	53	31
23	25.5	0	25.5	47			44	25	19	72	42	30	68	39	29	85	57	28
24	27	20	7	39	29	10	59	40	19	74	44	30	68	43	25	79 5	75	4.5
25	16	4	12				60.5	35	25.5	75.5	42.5	32	73	44	29	78		
26	17	-5	22	45	25	20	68.5	35	33.5	74	51	23	74.5			82.5	52	30.5
27	14			39	15	24	73	43	30	68	51.5	16.5	40.5	39	1.5	85	57	28
28		-22		40	19	21	46	45	1	67	38	29	53	32	21	81.5	70	11.5
29	10	-9.5	19.5				36	29	7	55	39	16	62	35	27	84	62	22
30	23.5	3.5	20				39	26	13	48	40	8	63	38	25	82	55.5	26.5
31	27	11.5	15.5				46	26	20				50.5					
Av.	29	10.3	15.8	31.9	12.7	18.3	43.8	24.4	18.6	60.6	36.2	25.2	65.7	42.9	23.0	72.7	47.7	24.9

Table No. 1 (Cont.)

	July.			August.			September.			October.			November.			December.		
	Highest.	Lowest	Range.	Highest.	Lowest	Range	Highest.	Lowest	Range.	Highest.	Lowest	Range.	Highest.	Lowest	Range.	Highest.	Lowest	Range.
1	89	58.5	30.5	84	65	19	77	62	15	76.5	50.5	26	59.5	32	27.5	40		
2	87.5			88	56.5	31.5	82	54	28	69.5	50	19.5	61	39	22	27.5	20	7.5
3	84	66	18	90	60	30	73	49	24	54	39	15	62.5			31.5	16	15.5
4	80	55	25	91.5	58.5	33	79	49.5	29.5	54	40	14	33	28	5	23	4	19
5	75	52	23	89	60	29	77			59	42.5	17.5	32	19	13	24	9	15
6	72.5	46	26.5	89	59	30	70.5	42.5	28	68	40.5	27.5	29	8.2	20.8	35	16	19
7	75	48	27	87.5	57	30.5	78.5	41	37.5	72	38	34	29	5	24	35	23	12
8	79	51.5	27.5	86	56	30	79	49	30	71	42	29	35	20	15	34.5	24	10.5
9	79	48	31	78	45	33	70			71	44	27	27.5	15	12.5	33	17	16
10	59.7	52	7.7	85	53.5	31.5	78	49	29	64	36	28	29	10	19	31	18	13
11	67	48	19	91	53.5	37.5	78	48.5	29.5	71	38.2	32.8	32	11	21	36	22	14
12	74	49.5	24.5	90.5	53	37.5	84	60	24	74.5	41	33.5	40	20	20	29	21.5	8.5
13	79	54	25	84	64.5	19.5	80.2	63.5	16.7	66	41	25	40	29	11	39	22	17
14	82.5	61	21.5	85.3	54.5	30.8	67	44	23	72	42	30	39	24	15	30	12	28
15	87	57	30	88	58	30	81	40.2	40.8	75.5	47	28.5	60	32	28	40		
16	85	58.5	26.5	88	60	28	83.5	52	31.5	75	43	32	40	29	11	22	10	12
17	81	68	13	92	58.5	33.5	86	53.5	32.5	69	49.5	19.5	39	27	12	24	15	9
18	76			90.2	58	32.2	77	54	23	66.5	36	30.5	53	27	26	22	4	18
19	78	52	26	90.8	64	26.8	68.5	55	13.5	66	45	21	52	32	20	19	1.5	17.5
20	82	50	32	90	62	28	40	39.5	.5	66	36	30	52	31	21	41	20	21
21	85	53	32	85	66	19	38	30	8	64	42	22	54	38	16	20		
22	87			86	57	29	46	25.5	20.5	59	42	17	24			20	5	15
23	91	57	34	80.5	53	27.5	62	32	30	60.2	33	27.2	28.5	17	11.5	19	−7	26
24	89	61	28	85	54	31	68	42	26	63	30	33	32	15	17	27	7	20
25	87	62	25	86	59	27	72	48.5	23.5	60.2	29	31.2	32	13	19	28	15	13
26	86	57	29	80	59.5	20.5	77	45	32	59.5	38	21.5	38.5	20	18.5	30	20	10
27	92	58	34	79	54.5	24.5	79.5	46	33.5	60	29	31	39	24.5	14.5	35.5	19	16.5
28	84	63.5	20.5	85.5	61	24.5	76	48	28	63	31	32	41	27.5	13.5	21	16.5	4.5
29	82	60	22	82	60	22	75.5	51.5	24	58.7	31	27.7	38	21	17	25	6	19
30	89	59	30	87	51	36	80.2	49.5	30.7	55.5	34	21.5	35	24	11	28	9	19
31	89	63	26	85	57	28				57	27.5	29.5				31	9	23
Av.	81.7	56	25.5	86.4	57.7	28.7	72.8	47.3	25.4	65.2	38.9	26.3	39.9	22.7	17.2	29	13.4	15.4

PRECIPITATION.

Table No. 2 gives the precipitation in detail for 1895. It shows the total rainfall for each month, also the days on which it occurred. The total for the year was 13.51 inches, a deficiency of about one inch compared with the two previous years.

TABLE NO. 2.

Precipitation, 1895.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sep.	Oct.	Nov.	Dec.
1	.20	.05			.3							
2			Tr							Tr		
3	.10				.15					.04		
4					.15						.46	
5	.08			Tr		.05						
6					.07							.10
7						.2						
8	.20											
9						.04			.08			
10							.05					
11							.35					
12			.05									
13	.10	.10							.04		.40	
14			.05	Tr								
15											.12	
16												.20
17	.10	.15				Tr						
18			.14						.04			
19	.60		.10									
20					.13							.10
21			.35					Tr	1.80			.45
22			.12					.05				
23	.50	.10									.35	.10
24												
25		.05										
26								Tr				
27				Tr	.92							
28			1.0				.04	.13				
29						Tr						
30				1.05		.22	.12				.22	
31	25										.15	
Total	2.13	.45	1.71	1.05	2.27	.51	.56	.18	1.96	.04	1.70	.95

AVERAGE PRECIPITATION.

The complete monthly record of precipitation since the taking of observations began at this Station is given in Table No. 3. The amount of rainfall at Logan is made the basis of comparisons, further on, with that of other points in Utah.

TABLE No. 3.

Annual Precipitation.

	1891	1892	1893	1894	1895	1896	Av'ge.
January			.75	1.86	2.13	1.31	1.51
February			2.45	1.65	.45	.35	1.23
March			2.64	1.72	1.71	1.73	1.95
April			2.16	1.41	1.05	2.11	1.68
May	2.48	3.00	1.73	.83	2.27	3.17	2.25
June	1.15	1.36	.14	.74	.51	.46	.73
July	.13	.34	.01	.28	.56	1.40	.45
August	.19	.00	.11	.58	.18	1.49	.43
September	1.44	.30	1.67	2.60	1.96	.91	1.48
October	.20	.27	.59	.67	.04	.68	.41
November	.57	.00	.92	.00	1.70	1.97	.86
December		.90	1.44	2.14	.95	.57	1.20
Total inches			14.51	14.48	13.51	16.15	14.66

HUMIDITY AND DEW POINT.

The average daily relative humidity and dew points for the seven months ending October, 1895, are given in table No. 4.

TABLE No. 4.

	RELATIVE HUMIDITY.				DEW POINT.			
	8:30 A. M.	1:30 P. M.	5:30 P. M.	Mean.	8:30 A. M.	1:30 P. M.	5:30 P. M.	Mean.
April	70	57	55	61	42	47	46	45
May	63	45	42	50	38	39	37	38
June	58	41	40	46	43	45	43	44
July	55	39	39	44	48	48	49	48
August	49	36	34	39	47	48	50	48
September	59	43	47	49	41	44	44	43
October	71	59	61	64	37	46	46	43

BAROMETRIC PRESSURE.

Table No. 5 gives the average of the daily readings of the barometer for each day of the year 1895, together with the average readings of the attached thermometer. The readings of the barometer have not been corrected for temperature or elevation. The elevation of the barometer is about 4,777 feet above sea level. The mean barometer for the year was 24.976 inches.

TABLE No. 5.

Date.	Jan.		Feb.		March.		April.		May.		June.		July.		Aug.		Sep.		Oct.		Nov.		Dec.	
	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.
1			78	24.978	58	25.162			59	24.852	63	24.850	80	24.900	79	25.063	72	24.972	69	24.965	65	25.050		
2	67	24.866	81	24.925	59	24.816	48	25.042	64	24.667			73	24.880	73	25 157	72	24.857	65	24.886	62	24.780	38	25.177
3	67	24.862					62	24.988	62	24.783	61	25.080	78	24.840	77	25.080	72	24.876	62	24.895			48	25.225
4	61	24.708	80	25.073	64	25.023	63	24.853	66	24.845	65	25.135			77	25.013	71	24.896	64	25.258	48	24.518	51	25.215
5	64	24.660	67	24.986	53	25.042	61	24.743			67	25.010	73	24.920	76	25.032			62	25.016	53	24.922	58	25.083
6			63	24 736	59	25.082	57	25.060	63	24.997	65	25.018	70	25.040	76	24.979	67	25.098			54	25.018	57	24.953
7	67	25.213	58	25.110	59	25.092			69	25.008	54	24.962			76	24.843	67	25.033	59	25.036	43	25.045	65	24.762
8	48	25.171	54	24.886	61	25.072			70	24.935	58	25.015	69	25.020	73	24.829			63	25.008	58	25.148		
9	62	25.150	53	24.811	56	24.940	65	24.875	65	25.073		25.000	71	24.993	72	24.950	69	24.843	61	24.955	52	25.148	42	25.306
10	61	25.176					67	24.891	60	25.218	55	25.035	61	25.000	71	24.962	69	24.830	62	25.150			49	25.293
11	55	25.161	50	25.050			71	25.106	60	25.183	63	25.053	66	25.030			72	25.018	63	25.175			59	25.320
12	58	25.100	43	24.841	59	24.575	69	25.275	65	25.085	66	25.022	68	25.003	77	24.933	72	24.985	68	25 100	52	24.781	58	25.192
13			49	24.775	54	24.575	69	24.905	62	25.050	69	24.862	71	24.970	81	24.940	73	24.855	62	25.032	58	25.118	61	24.975
14	78	24.833	45	25.126	49	24.653			68	25.010	66	24.750			76	25.070	66	25.032	62	25.105	61	25.313	57	24.937
15	53	24.741	49	25.560	57	24.825	55	25.031	67	25.000	63	24.808	77	25.037	78	25.032			69	25.170	61	25.340		
16	48	24.503	42	25.220	50	25.080	64	25.081	59	25.081			75	24.978	79	25.055	75	24.935	71	25.113	61	25.370	42	24.645
17	61	24.575		25.060			70	24 958	62	25.015	55	25.125	74	24.890	76	25.060	73	24.970	69	25.032			48	24.800
18	61	24.983	87	25.223			72	24.988	67	24.896	60	25 150	72	24.985			70	24.860	64	25.028	55	25.125	47	25 065
19	64	24.676	48	25.210	65	25.035	68	24.903			63	25.095	68	24.895	81	25.088	71	24.703	66	25.078	59	25.216	46	24.965
20			67	25.025	65	24.775	65	25.056	67	24.895	67	25.060	71	24.004	80	24.998	61	24.776			63	24.988	56	24.547
21			65	24.973	60	24.855			68	24.858	69	25.067	74	25.013	80	24.923	63	24.906	61	24 947	66	24.638	53	24.777
22	58	24.976			56	24.840	57	25.062	65	24.940	72	25.094	75	25.064	71	25.019			58	25.007	47	24.615	40	25.060
23	56	24.763	66	24.931	61	24.972	67	25.136	64	24.913			75	25.096	71	25.073	55	25 136	60	25.100	54	24.918	35	24.775
24	60	24.803					68	24.941	62	24.975	75	24.927	74	25.100	71	25 046	67	25.067	61	25.200			40	24.897
25	59	24.993	75	24.985	55	25.160	66	24.847	63	24.945	70	25.033	78	25.009	76	24.892	71	25.103	59	25.172	53	25.070		
26	53	24.831	70	25.152	68	25.038	72	24.870			72	25.010	76	24.945	76	24.775	73	25 148	64	25.022	54	24.995	37	25.060
27			63	25.265	69	24.845	69	24.790	56	24 612	75	24.952	76	24.995	72	24.882	71	25.112			57	24.865	41	24.930
28			62	25.105	64	24.650			58	24.650	76	24.983	79	25.039	75	24.880	71	25.132	56	25.042			38	25.023
29	56	24.960			63	25.080	55	24.770	62	24.915	73	24.983	78	25.053	75	24.887	65	25.035	60	24.963	46	24 962		
30	58	24.825			59	24.958	58	24.778					78	24.989	74	25.003	65	24.918	64	25.098	45	25.000	35	25.077
31	55	24.846							59	24 752			79	24.987	74	25.026			65	25.143			33	25.080
Av.	59	24.891	61	25.042	59	24.922	64	24.956	63	24.931	66	25.003	73	24.953	76	24.982	69	24.965	63	25.060	55	24.997	47	25.005

OBSERVATIONS AT THE EXPERIMENT STATION, 1896.

The daily readings of the maximum and minimum thermometers for 1896 are given in Table No 6, together with the daily range.

Table No. 6.

Maximum and Minimum Temperature, 1896.

Date.	Jan.			Feb.			March.			April.			May.			June.		
	Max.	Min.	R'ng.	Max.	Min.	R'ng.	Max.	Min.	R'ng.	Max.	Min.	R'ng.	Max.	Min.	R'ng	Max.	Min.	R'ng.
1	42	24	18	40	21	19	34	25	9	39	13	26	60	54.5	5.5	74.5	49	25.5
2	23	15.2	7.8	36.5	26.5	10	24	3	21	54	20	34	59	36	23	79.2	52.5	26.7
3	29	11	18	36			34	7.5	26.5	50	30	20	62	34	28	65	48	17
4	26	3	23	27	14	13	36	24	12	62	35	27	64	44	20	68	44.5	23.5
5	25	2	23	34	21	13	32	14	18	67	41	26	50	41	9	69	49	20
6	26	-1	27	28	19	9	27.5	17	10.5	70	42	28	50	32.5	17.5	64	42	22
7	28	7	21	28	8	20	37	23	14	51.5	34	17.5	52	32	20	73	42.5	30.5
8	20	2.5	17.5	38	18	20				57	35	22	52	40	12	84	50	34
9	27	9	18	43	23	20		22		50	33	17	48	34	14	84	56	28
10	34	6.5	27.5	47	26	21	46	19	27	51	34	17	44.5	32.5	12	68	53	15
11	32	11	21	38	29	9	47.5	31	16.5	41	30	11	45	34	11	77	39	38
12	30	10	20	33	20	13	47.5	30	17.5	51	30.5	19.5	47	32.5	14.5	82	47	35
13	10	—		41	25	16	49	34	15	55.5	40.5	15	45	32.5	12.5	84	60	24
14	28	1	27	45.5	28	17.5	33	18	15	48	35.5	12.5	43.5	29	14.5	87	58	29
15	41	23	18	49	27	22	42	14	28	41	22	19	48	24	24	87		
16	45	33	12	44	26	18	41.5	22	19.5	38	27	11	56	31.2	24.8	83	57	26
17	47	37	10	46	27	19	43	20	23	31			54	31.4	22.6	85.5	58	27.5
18	49	38	11	43.5	24	19.5	52.5	24	28.5	42	27	15	58	30	28	82	53	29
19	45	33.5	11.5	46	24	22	59	30	29	46	30.5	15.5	48.2	22.5	25.7	84	56	28
20	44	32	12	48	24	24	55	37	18	54	33	21	61.2	32.7	28.5	82.5		
21	46	—		49	25	24	55	38	17	63	32.5	30.5	63	40	23	85	56	29
22	39	28	11	50	28	22	56	43	13	54	47	7	67.5	46	21.5	81	55	26
23	37	20	17		26		65	38	27	62	36	26	73	43	30	80	55	25
24	37	23	14	47	24	23	64	41.5	22.5	67	47.5	19.5	61.5	44	17.5	75.5		
25	46	23	23	58	29	29	59	45	14	67	49	18	68.5	44	24.5	82	49	33
26	50	34.5	15.5	57	36.5	20.5	60	40	20	60	35	25	72.5	48.5	24	85		
27	48	29	19	45.5	28	17.5	42	33	9	44	35	9	74.2	48	26.2	86	56	30
28	47	32.5	14.5	40.5	31.5	9	38	30	8	55	32.5	22.5	80.5	48.2	32.3	87	55	32
29	43	30	13	38	25	13	46	26	20	64.5	33	31.5	65	53	12	90	59	31
30	39.5	30	9.5				30	25.5	4 5	50	35	15	53	46	7	86		
31	40	22.5	17.5				33	17	13				70	47.5	22 5			
Av.	36.2	19.8	17.1	42.1	24.4	17.9	44.4	26.4	17.8	53.1	33.8	19.9	57.9	37.8	19.6	80.1	52.0	27.4

Table No. 6, (Cont.)

	July.			Aug.			Sept.			Oct.			Nov.			Dec.		
	Max.	Min.	R'ng.	Max.	Min.	R'ng.	Max.	Min.	R'ng.	Max.	Min.	R'ng.	Max.	Min.	R'ng.	Max.	Min.	R'ng.
1	89	59	30	88	58	30	76	53	23	89	48	41	40	31.5	8.5	29	14	15
2	81	52	29	85	58.5	26.5	80	51.5	28.5	81	46	35	37	27	10	44	27	17
3	84	55	29	81	60	21	83	58	25	75	48.5	26.5	41	30	11	39	32	7
4	86	56	30	74	49	25	86	51	35	69	34	35	44	26	18	41	28	13
5	89	59	30	82	49	33	88	50.5	37.5	69	34	35	34	29	5	43	31	12
6	81	57.5	23.5	83	60	23	86	54.5	31.5	72	38	34	37	18	19	34	29	5
7	89	60.5	28.5	80	58	22	79	65.5	13.5	71	41	30	38.5	15	23.5	30	18.5	11.5
8	88.5	59	29.5	82.5	54	28.5	63	59.5	3.5	67	43.5	23.5	42	28	14	37	25	12
9	86	58.5	27.5	79	54	25	59	41	18	59.5	38	21.5	47	32	15	40	24.5	15.5
10	89.7	61	28.7	84	54	30	61	35.5	25.5	60	32	28	39	29	10	38	15	23
11	97	62	35	89	57	32	70	47	23	66	36	30	38	26	12	39	13	26
12	91	59	32	90.5	52	38.5	76.5	46	30.5	57	36	21	40	22	18	43	24	19
13	77.5	58	19.5	90.5	56.5	34	81	46	35	71	41	30	52	29.5	22.5	40.5	33.5	7
14	78	59.5	18.5	91	63	28	81.5	52	29.5	74	40	34	57	28	29	39	23	16
15	84	55	29	92	67	25	82	62	20	72	51	21	65	39	26	39	27	12
16	81	62	19	89.5	67	22.5	76	46	30	75	44	31	60	47	13	37	20.5	16.5
17	89	62	27	87	63.5	23.5	65	44	21	72	42	30	55	45	10	35	27	8
18	88	64	24	81	62	19	66	45	21	74.5	41	33.5	53	37	16	35	20.5	14.5
19	89.7			87	54.5	32.5				69	40	29	46	34	12	43	20	23
20	87	58.5	28.5	72.5	58.5	14	72			69	39	30	48	34	14	40.5	28	12.5
21	89	59	30	79.5	59	20.5	74	45	29	61.5	40.5	21	39	30	9	38.5	22.5	16
22	77	71	6	75	52.5	22.5	75.5	40	35.5	64	39	25	49.5	34.5	15	36	15	21
23	80	59	21	80	52	28	66.5	48.5	18	64	40	24	41	33.5	7.5	28	14	14
24	81	55	26	79.5	54	25.5	64	47	17	64	34	30	54	36.5	17.5	37	17	20
25	78	58	20	86	54.5	31.5	59	51	8	66	37.5	28.5	51	41	10	39	22.5	16.5
26	79	56	23	85	55	30	64	36	28				14	8	6	36	20	16
27	79	59	20	86	55.5	30.5	77	36	41				7	-4	11	42	31	11
28	78.5	55	23.5	80	60	20	75	39.5	35.5		31		5.5	11	16.5	44	27	17
29	87	55	32	79	57	22	73	43	30	47	30	17	8			44	26	18
30	70	51	19	82	62	20	78	45	33	50.5	34	16.5	19	-6	25	40	20	20
31	84.5	53	31.5	80	61.2	18.8				51	32	19				36	26	10
Av.	84.1	58.3	25.7	83.2	57.4	25.9	73.7	47.8	25.9	66.8	39.1	27.9	40.1	26.5	14.6	38.3	23.3	15

EXTREME TEMPERATURES.

1891 TO 1896.

The following table gives in convenient form the highest reading of the thermometer in each month of the years 1891 to 1896 inclusive, and the mean for the six years. The lowest reading of the thermometer is also given for the same years. An examination of the table will show that the highest point reached by the thermometer during the six years was 98 degrees, and that the lowest maximum summer temperature was 92, which occurred in 1895. The average of the six years is 95.8. July shows the highest maximum summer temperature.

The lowest winter temperature during the same period was 22 degrees below zero which occurred in January, 1895. The minimum ranged from 10 to 22 degrees below zero, and the average is —13.4. The record shows February to be the coldest month; or, at any rate, the month that has the lowest average minimum temperature. Taking 32 degrees as the freezing point, the average shows that on the Station farm there are four months of the year, viz., June, July, August, and September, entirely free from frost, though in 1891 and 1895 frezing point was reached in June, and during the six years the thermometer twice registered a temperature of 32 degrees or lower in September. It does not necessarily follow, however, that killing frosts occurred on those dates. It frequently happens that there is no precipitation of frost at a temperature of 32 degrees; and. on the other hand, there may be "killing frost" even though the temperature of the air be above 32 degrees, the results being somewhat modified by the moisture condition of the air on the surface of the ground.

Table No. 7.

	MAXIMUM.							MINIMUM.						
	1891	1892	1893	1894	1895	1896	Mean	1891	1892	1893	1894	1895	1896	Mean
January	48		49	45	42	50	46.8	1		2	–4	–22	–1	–4.8
February	54		46	42	47	58	49.4	–10		–10	–14	–16	8	–8.4
March	59	63		58	73	65	63.6	4	15	1	10	12	3	1.5
April	86	77		74	76	70	76.6	23	16	17	28	19	13	19.3
May.....	84	80	82	82	80	80	81.3	32	27	29	30	32	24	29
June	83	95	90	85	85	90	88	39	31	39	38	32	39	36.3
July.....	98	94	98	92	92	97	95.2	42	44	46	48	46	51	46.2
August	95	96	95	94	92	92	94	45	41	36	44	45	49	43.3
September....	90	92	88	82	86	88	87.7	33	42	36	32	26	35	34
October.	80	85	76	74	76	81	78.7	26	22	28	20	28	30	25.7
November ...	73	65	62	64	62	65	65.2	13	5	10	15	5	–11	6.2
December. ...	50	57	54	47	41	44	48.8	–2	–15	11	–12	–7	13	–2
Year	98	96	98	94	92	97	95.8	–10		–10	–14	–22	–11	–13.4

MEAN TEMPERATURE.

1891 TO 1896.

The mean monthly and annual temperatures at the Experiment Station since observations began in 1891 to December 31, 1896, are given in Table No. 8. The average monthly and yearly temperatures for the six years are also given. The average annual temperature for the four years for which the record is complete is 46.4 degrees.

TABLE No. 8.

Mean Temperature.

	1891	1892	1893	1894	1895	1896	Av'ge.
January	22.4		24.4	24.3	19.6	28.0	23.7
February	24.8		19.6	16.6	22.3	33.3	23.3
March	34.8	37.2		32.8	34.1	35.4	34.9
April	49.6	42.8		46.8	48.4	43.5	46.2
May	58.8	52.2	53.8	58.8	54.3	47.8	54.3
June	62.2	61.6	63.7	59 7	60.2	66.0	62.2
July	71.1	70.3	72.0	69.1	68.8	71.2	70.4
August	72.4	70.4	69.0	66.4	72.0	70.3	70.1
September	63.6	65.9	59.8	58.6	58.4	60.7	61.2
October	52.4	50.5	49.6	50.3	52.1	53.0	51.3
November	40.9	37.0	35.8	42.8	31.3	33.3	36.8
December	25.4	24.6	33.6	22.2	21.1	30.8	26.3
Annual	48.2			45.4	45.2	46.9	46.4

PRECIPITATION 1896.

The precipitation is shown in detail for 1896 in the following table. The total for the year was 16.15 inches, the greatest total precipitation in any single year since records have been kept at the College. The monthly and yearly precipitation for each of the six years ending 1896 are given in Table No. 3, page 8. The excessive precipitation of 1896 occurred during the months of April, May, July and August. The winter months, on the other hand, had a deficiency of moisture.

TABLE NO. 9.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sep.	Oct.	Nov.	Dec.
1			.23		.03						.50	.15
2	.10					.02						.07
3					.02			.14				
4												
5		15			.47							.05
6						04	.10		.02			
7					.39		.02		.27			
8			.17		.24							
9					.13						.45	
10					.26							
11		.20		.60							.25	
12							.27					
13				.12								
14				.71	.07		.19					
15	.15											
16												
17				.08	.25	.30					Tr	
18							Tr				Tr	
19				.10	.17	.10						
20	.70		.13						.30		Tr	
21	.36											
22				Tr	.17		.28	1.25			.21	
23									.30		.16	
24					Tr							
25							Tr		.02		.40	
26			.07							.68		
27			.65	.17			.12					
28			.41					.10				
29			.07		.08							
30				.29	.85		42					
31				.04	.04							.30
Total	1.31	.35	1.73	2.11	3.17	.46	1.40	1.49	.91	.68	1.97	.57

RELATIVE HUMIDITY AND DEW POINT.

The term relative humidity, means the precipitation of moisture in the atmosphere. If the percentage is 100 the air is totally saturated, that is, it is incapable of holding in suspension any more moisture. When it reaches that point condensation takes place and the moisture is precipitated upon the earth in the form of snow or rain, or dew or frost, according as the temperature of the air is above or below freezing point. The capacity of the air to retain moisture is not always the same; it varies with the temperature of the air. When the temperature is high the capacity is increased, and with a low temperature the capacity is decreased. If the relative humidity at noon is 50 per cent. and at night 100, it does not follow that there is double the amount of moisture at night. The moisture may be the same in amount at night and at noon, but the air has been

so cooled at night as to reduce the capacity for moisture just one-half, and dew is then deposited.

The dew point, or dew point temperature, is the temperatures at which condensation takes place. The dew point varies as the percentage of humidity varies. If the humidity is low a greater reduction of temperature will have to occur before condensation takes place and moisture is precipitated. On the other hand, if the humidity is high a very small reduction of the temperature, or cooling of the air, will result in condensation.

The following table gives the relative humidity and dew point at this Station for seven months ending October, 1896. The table represents the averages of three daily readings taken at 8:30 a. m., 1:30 p. m. and 5:30 p.m.

TABLE No. 10.

Relative Humidity and Dew Point, 1896.

	April.		May.		June.		July.		Aug.		Sept.		Oct.	
	R. H.	D. P.	R. H.	D. P.	R. H.	D. P.	R. H.	D. P.	R. H.	D. P.	R. H.	D. P.	R. H.	D. P.
1			49	35	52	51	33	47	39	58	56	51	40	41
2			49	33	52	53	39	43			57	53	39	40
3			43	36	65	48	40	48	34	37	54	55	45	42
4			61	43	56	48	37	54	54	50	53	55		
5			83	39	65	48	41	59	50	53	49	53	27	29
6			74	36	59	44	60	57	41	54	40	49	43	36
7	67	34	74	34	52	47	58	61	53	55	52	53	47	41
8	63	40	71	36	55	57	50	59	35	46	72	46	45	37
9	71	35	58	32	56	61	51	59	48	55	66	40	50	32
10	75	36	83	33	45	40	46	57	49	56	54	34	48	34
11	78	29	74	34	47	45	46	61	48	56	50	43	54	36
12	49	31	66	30	48	51	55	57	52	59	47	44	59	41
13	68	41	54	26	51	58	74	60	52	58	48	48	48	40
14	67	32	68	25	52	64	70	59	47	57	43	49	53	43
15			62	31	56	63	64	61	49	62	34	43	46	45
16			49	30	58	59	58	62	63	62	46	41	48	42
17			57	30	56	58	51	63	63	62	53	41	52	45
18	60	28	56	31	54	55	44	60	73	62	58	45	56	45
19	70	34	81	37	44	50	38	55	65	61	44	47	56	44
20	51	30	43	27	48	51	52	56	85	63			65	40
21	50	33	58	39	25	43	44	54	77	60	42	47	71	43
22	70	36	53	43	41	47	63	59	63	54	60	46	64	45
23	37	20	52	46	36	45	63	59	53	53	48	39	69	43
24	30	29	58	45	39	42	29	34	56	54	67	45	67	43
25	32	32	48	43	38	44	63	56	52	55	49	35	68	43
26	38	26	51	47	34	44	58	59	59	54	52	36		
27	85	27	51	48	39	47	54	52	49	55	40	30		
28	54	33	48	48	33	49	53	57	62	57	44	38	70	35
29	44	33	81	55	36	50	51	54	59	59	39	37	79	40
30	76	34	87	46	37	51	77	54	53	59	37	37	71	35
31			58	53			60	55	52	53			76	41
Av.	59	32	61	38	48	50	52	56	54	56	50	41	56	40

Table No. 11.

Barometric Pressure, 1896.

	Jan.		Feb.		March.		April.		May.		June.		July.		Aug.		Sep.		Oct.		Nov.		Dec.	
	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.	Ther.	Bar.
1			53	24.998			49	25.278	59	24.835	66	24.875	73	24.972	75	25.065	69	24.952	65	25.200	46	24.913	39	25.086
2	33	25.062			36	24.785	55	25.107	58	24.863	69	24.760	72	25.042	75	24.950	69	25.063	67	25.103	40	24.870	56	25.133
3	31	25.237	44	24.800	43	24.635	62	24.903	58	24.775	65	24.768	71	25.143	73	24.835	75	25.015	67	24.958	55	25.100	56	25.243
4	32	25.223	47	24.945	45	24.635	56	24.928	57	24.680	61	24.902			70	25.026	72	25.103	61	25.062	50	25.042	61	25.028
5			51	24.737	50	24.735			54	24.507	61	24.763			72	24.942	71	25.093	59	25.115	45	24.895	61	24.886
6			54	24.925	47	24.797	60	24.820	55	24.732	60	24.890	73	25.087	76	24.885	74	24.925	64	25.078	49	25.110	47	24.983
7	41	25.295	48	25.048	56	25.093	56	24.963	57	24.888	62	25.050	76	25.077	74	25.015	73	24.920	66	24.965	50	25.185	35	25.225
8	43	25.240	54	25.133			61	24.933	56	24.710	70	24.963	76	25.087	72	25.003	64	24.817	61	24.792	42	24.815	52	25.346
9	47	25.223			46	25.009	60	24.672	52	24.808	70	24.915	75	25.078	73	25.065	57	24.927	58	25.035	44	24.475	51	25.285
10	43	25.035	50	24.880	46	25.141	63	24.523	46	24.800	67	25.062	79	25.082	73	25.040	52	24.970	56	25.010	51	24.725	51	25.158
11	51	25.090	55	24.793	59	25.113	61	24.722	45	24.790	64	25.187	80	25.022	75	25.027	57	24.790	55	24.856	53	25.026	48	24.973
12			57	25.045	62	25.015			57	25.012	69	24.975	75	24.975	74	25.065	64	24.805	54	25.095	52	25.166	59	24.903
13	31	24.917	59	25.140	61	24.770	56	24.650	57	25.037	74	24.950	72	25.008	77	25.038	67	24.963	62	25.072	56	25.118	48	24.836
14	46	24.900	58	25.085	53	25.000	59	24.478	54	24.928	75	25.050	71	25.047	77	24.997	72	24.977	64	25.035	57	25.068	48	24.875
15	52	24.805	60	25.250		25.100	44	24.750	56	24.780	77	25.165	74	25.065	82	24.998	74	24.943	65	25.136	57	24.952	54	24.902
16	56	24.800			40	24.850	56	24.732	54	24.783	75	25.147	74	25.025	79	25.058	63	24.980	64	25.138	64	24.978	57	24.872
17	54	24.865	45	25.250	55	25.130	54	24.690			74	24.968	80	24.980	79	25.087	60	24.762	64	25.000	61	24.898	55	25.047
18	60	24.862	56	25.200	62	25.162	57	24.720	49	24.738	73	24.915	77	25.010	74	25.080	61	24.698	59	24.990	63	24.972	56	25.190
19			54	25.170	63	25.087			51	24.923	73	24.927	75	25.040	74	25.060	59	24.856	58	25.022	62	24.911	51	25.255
20			59	25.113	64	24.860	51	24.950	50	25.017	70	25.025	76	25.001	70	25.070			57	24.925	61	24.830	46	25.263
21	56	24.741	59	25.040	67	24.977	62	24.940	64	24.923	75	25.015	75	24.928	69	25.027	60	25.067	58	24.945	59	24.982	42	25.246
22	51	24.997			60	25.050	57	24.597	65	24.975	73	24.985	74	24.991	68	25.073	65	24.975	62	24.923	52	24.752	36	25.146
23	45	24.767			60	25.147	60	24.840	66	24.992	73	24.892	74	25.037	69	25.092	62	24.856	62	24.955	57	24.877	33	25.180
24	48	24.928	45	25.250	68	24.938	65	24.815			69	24.983	72	25.020	69	25.10.	59	25.045	60	24.939	62	24.742	37	25.150
25	56	24.938	55	25.207	71	24.943	67	24.838	63	25.060	70	25.050	70	24.947	68	25.085	57	25.015	58	24.780	58	24.423	37	25.137
26			59	24.887	65	24.668			62	24.998	73	25.107			69	25.100	54	25.103			32	24.745	37	24.962
27	47	24.865	60	24.965	62	24.570	51	24.757	70	25.013	69	25.117	71	24.983	74	25.048	54	25.183			36	24.920	39	24.963
28	55	24.738	50	24.695	61	24.697	56	25.030	70	24.992			72	25.003	70	25.093	58	25.058	60	24.957	33	25.240	40	24.860
29	58	24.772	53	24.655			62	24.813	45	24.922	77	25.020	73	25.000	73	25.166	64	24.910	53	24.982	23	25.285	49	25.025
30	57	24.958			43	24.827	60	24.935	38	24.882	75	25.020	66	25.100	74	25.100	63	25.038	58	25.107	36	25.246	56	24.825
31	54	25.135			48	25.178							70	25.105	73	24.955			58	24.725			59	24.822
Av.	48	24.974	53	25.012	53	24.925	58	24.801	56	24.870	70	24.981	74	25.031	73	25.036	64	24.959	61	24.964	50	24.941	48	25.058

BAROMETRIC PRESSURE, 1896.

Table No. 11 gives the average daily reading of the barometer and attached thermometer for 1896. The observations are taken three times daily and the average for each day is given. The barometer readings are not corrected for temperature or elevation. The mean barometer for the year was 24.963 inches.

SUMMARY FOR 1896.

Mean annual temperature, 46.9.
Mean daily range, 22.
Mean monthly range, 52.
Yearly range, 108.
Highest temperature, 97.
Lowest temperature, –11.
Highest sensible temperature, 75.
Mean humidity, 54.
Mean dew point, 45.
Mean barometer, 24.963 inches.
Total precipitation, 16.15 inches.
Last killing frost, May 18.
First killing frost, Oct. 10.

UTAH CLIMATE.

In what follows, the various questions relating to temperature, evaporation, humidity, precipitation, etc., in Utah as a whole, will be discussed. It is believed that the records upon which the discussion is based, the compilation of which has involved a great deal of labor, are the most complete that have yet been published on the climate of Utah. The records are brought up to the end of 1895 and extend back far enough to make of the average results a fairly good index of the climate of the state.

That it is possible to place before the public these data is because of the disinterested labors of a few individuals throughout the state. Few people fully appreciate the labor of the voluntary observers, or understand the extent of the work involved in the gathering of this mass of statistics. They receive their instruments free of cost from the government and likewise the blanks upon which to make their reports, but they receive no compensation for their labors, though their instruments require daily attention throughout the year and the making of the records requires a high degree of care and accuracy. And they are rendering a signal service to the state. But for their gratuitous labors, extending back in some cases, a quarter of a century, we would be left completely in the dark so far as our knowledge is concerned of the climatology of the state in which we live.

ANNUAL TEMPERATURE.

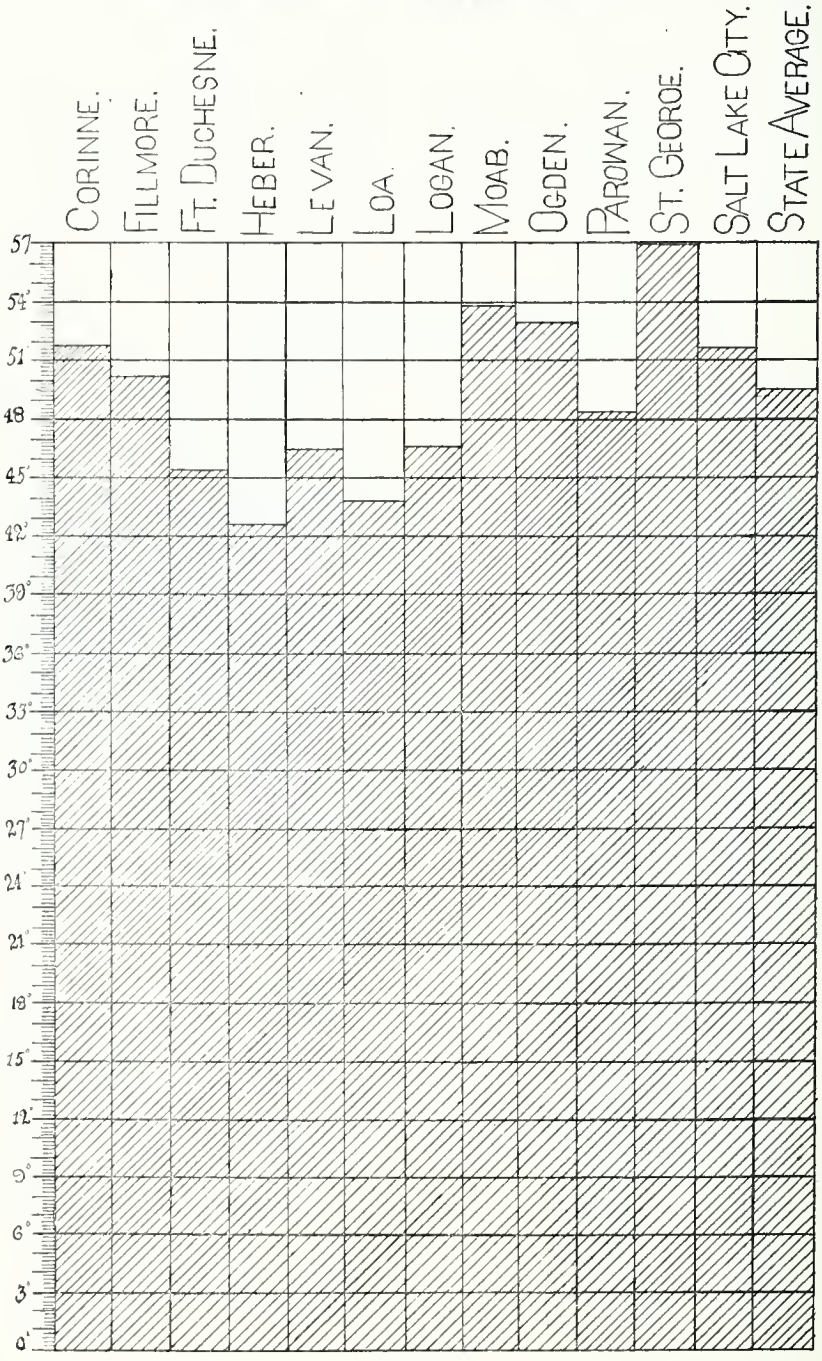


FIG. 1.

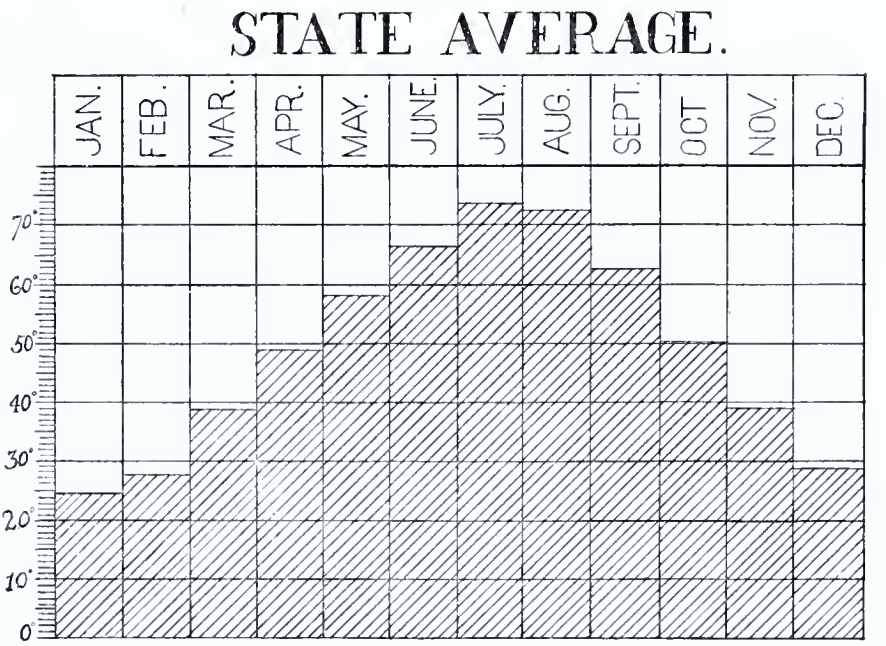


FIG. 2.

MEAN TEMPERATURE.

Table No. 12 gives the mean monthly temperature for the five years ending 1895. For Fillmore, Fort Duchesne, Heber and Loa the record is not complete for the five years, as will be seen. The mean monthly temperature is obtained by adding together the daily readings of the maximum thermometer and the daily readings of the minimum thermometer, then dividing the sum of each by the number of days in the month, the result being in the one case the average highest daily temperature of the month, and in the other the lowest daily temperature of the month. Then by adding these two together and dividing by two the mean monthly temperature, as used in the weather records, is obtained. To obtain the mean temperature for the year, the sum of the mean monthly temperature is divided by twelve. This is given in detail for the five years in question, for the reason that it has never yet been published except in the scattered monthly reports of the Weather Bureau. The

records of mean temperature previous to 1891, as far back as there are any records, have been published by the government Weather Bureau in a work entitled "The Climate of Colorado and Utah."

In table No. 13 these records are added to those contained in table No. 12, and the whole averaged. This gives to the end of 1895 the records of mean monthly temperature for the several Utah points, together with the yearly means, for the full series of records. The length of the records varies at different points, as will be seen by reference to the last column of the table. Salt Lake City shows a longer record than any other observatory in the state, the first observations that are recorded being taken in 1850, though up to 1875 they are very incomplete. There is a complete record, however, for the different months for from 30 to 34 years. Corinne has a record since 1870—one of the most complete in the state. The record at Ogden is about the same length as that of Corinne. Heber has a record of only three years, Fillmore of four. At Logan the record is complete for five years, with the exceptions of the months of January, February, March, and April, for which it is only four years.

The altitudes of the stations are given in the first column of the table, and the question of altitude should be taken into account, as it has a very important bearing on temperature.

Figure No. 1 shows in graphical form the mean annual temperature for the twelve stations and the average of the twelve. Figure No. 2 shows the mean monthly temperature for the state.

TABLE No. 12.

Monthly and Yearly Temperature.

	CORINNE.						FILLMORE.						FORT DUCHESNE.					
	1891	1892	1893	1894	1895	Av.	1891	1892	1893	1894	1895	Av.	1891	1892	1893	1894	1895	Av.
January	26.3	21.9	24.0	27 4	24.2	24.8			30.3	25.4	25.4	27.0	16.2	14.0		8.1	8.5	11.7
February	26.9	27.4	26.8	22.2	26.8	26.0			31.7	24.4	27.2	27.7	19.1	30.4		8.8	7.3	16.4
March	37.9	41.9	38.6	36.6	41.5	39 3			41.4	41.0	36.0	39.4	35.4	39.4		39.4	27.9	35.5
April	51.6	48.5	48.6	57.5	59.2	53.1		49.9	47.4	48.6	48.6	48.6		46.4		47.9	47.9	47.4
May	64.6	58.4	57.0	70.7	67.5	63.6		58.1	57.4	59.4	56.0	57.7		53.8		60.7	55.2	56.6
June	66.8	68.2	76.1	74.5	75.5	72.2		70.2	69.5	62.4	61.4	65.9	60.6	64.0	73.4	66.1	60.4	64.9
July	75.9	76.9	81.2	84.2	84.8	80.6		78.6	75.9	71.1	69.4	73.7	69.7	70.8	74.1	72.7	64.6	70.4
August	78.6	75.9	78.4	82.6		78.8		76.7	73.0	74.4	73.4	74.4	68 8	68.9	70.2	72.0	69.8	69.9
September	65.3	69.2	68.0	64.5	68.7	67.1		71.8	63.8	62.2	63.0	65.2	60.8	63.8	61.4	68.0	60.4	62.9
October	48.6	52.1	54.1	50.7	55.5	52.2		54.4	48.4	53.0	55.5	52.8	45.4		48.2	48.3	47.5	47.4
November	41.0	38.0	38.0	35.9	32.2	37.0		43.5	38.9	43.6	38.4	41.1	36.0	34.7	32.9	41.0	27.1	34.3
December	25.0	28 2	31.6	26 9	24.6	27.3		28.3	34.6	28.4	25.1	29.1	20.2		30.4	24.8	2.4	19.5
Average	50.7	50.6	51.9	52.8		51.8			51	49.5	48.2	50.2				46.5	39.9	44.7

Table No. 12, (Cont.)

Monthly and Yearly Temperature.

	HEBER.						LEVAN.						LOA					
	1891	1892	1893	1894	1895	Av.	1891	1892	1893	1894	1895	Av.	1891	1892	1893	1894	1895	Av.
January			19.6	17.2	18.4	18.4	16.2	21.2	21 0	22.8	21.3	20.5		25 4	27 9	20.0	19.5	23.2
February			20.3	12.0	17.3	16.5	19.8	30.0	22 0	20.7	20.6	22.6		29.8	23.8	20.5	23.8	24 5
March			31.6	33.3	29.6	31.5	32.8	37 4	33.1	37.7	34 4	35.1		32.2	33.3	34.5	32 4	33.1
April			41.3	42.8	46.4	43.5	45.1	43.8	42.0	46.4	51.5	45.8		40.8	40.4	42 7	40 9	41 2
May			51.8	54.7	53.0	53.2	56.8	53.7	53.7	58.8	57.6	56.1		50.2	50.6	53.4		51.4
June			62.8	56.8	57.6	59.1	60.8	65.9	68.0	62.2	63.5	64.1		60.3	61.1	56.4		59 3
July			68 1	66.6	65.0	66.6	71.7	73.6	71.6	71.1	74.2	72.4		67.6	67.5	66.7	63.8	66.4
August			64.4	65.6	66.1	65.4	70.4	69.9	68.3	71.0	76.2	71.2		64 6	63.8	64.4	64.7	64.4
September			56.4	53.4	56.2	55.3	58.8	63.6	59.2	58.7	65.9	61.2		58.4	53.2	52.2	55.1	54.7
October			44.3	45.4	46.4	45.4	45.2	44.7	47.0	50.0	50.8	47.5		42 4	42 3	43 9	43.0	42 9
November			32.5	39.0		35.7	37.1	33.2	33.6	39.4	32.9	35.2		33.2	29.8	36 6	30.0	32.4
December			27.6	20.9	14.0	20.8	21.5	21.0	31.9	26.8	21.2	24.5		22.2	27 4	22.2	19.2	32 7
Average			43.4	42.3		42.6	44.7	46.5	46.0	47.1	47.5	46.4		43.9	43.4	42.8		43.8

TABLE 12, (CONTINUED.)

Mean Monthly and Yearly Temperature.

	LOGAN.						MOAB.						OGDEN.					
	1891	1892	1893	1894	1895	Av.	1891	1892	1893	1894	1895	Av.	1891	1892	1893	1894	1895	Av.
January	22.4		24.4	24.3	19.6	22.7	27.9	25.7	26.8	28.0	31.2	27.9	28.2	24.1	29.1	28.6	27.9	27.6
February	24.8		19.6	16.6	22.3	20.8	35.9	40.1	33.9	32.6	32.2	34.9	27.7	27.3	28.9	25.1	27.9	27.4
March	34.8	37.2		32.8	34.1	34.7	43.5	47.0	42.8	48.0	47.0	45.7	37.5	41.7	39.1	39.1	39.3	39.3
April	49.6	42.8		46.8	48.4	46.9	55.8	54.3	54.2	55.4	57.2	55.4	52.0	48.1	49.9	48.8	52.1	50.2
May	58.8	52.2	53.8	58.8	54.3	55.6	67.7	62.6	64.3	66.2	64.2	65.0	62.8	56.7	60.5	63.9	60.0	60 8
June	62.2	61.6	63.7	59.7	60.2	61.5	73.3	71.6	75.6	72.0	68.6	72.2	65.4	66.0	74.9	66.7	66.6	67.9
July	71.1	70.3	72.0	69.1	68.8	70.3	77.1	76.4	78.4	80.4	77	77.9	75.7	78 9	80.7	76.9	75 3	77.5
August	72.4	70.4	69.0	66.4	72.0	70.0	72.8	72.6	71.8	77.2	77.4	74.4	75.0	80.6	79.4	77.7	76.4	77.8
September	63.6	65.9	59.8	58.6	58.4	61.3	65.5	64.2	63.5	63.1	66.4	64.5	64.9	73.2	66.3	61.1	62.0	65.5
October	52.4	50.5	49.6	50.3	52.1	51.0	50.4	51.2	51.2	54.8	52.4	52.0	50.3	56.4	55.6	50.6	53.4	53.2
November	40.9	37.0	35.8	42.8	31.3	37.6	40.5	38.2	36.8	42.6	38.5	39.3	41.7	43.3	40.0	41.6	35.5	40.4
December	25.4	24.6	33.6	22.2	21.1	25.4	28.0	31.1	34.2	34.7	26.5	30.9	26.7	31.1	35.3	30.8	26.6	30.1
Average	48.2			45.4	45.2	46.5	53.2	52.9	52.8	54.8	53.2	53.4	50.7	52.3	53 3	50.9	50.2	51.5

(TABLE 12, CONTINUED.)

Mean Monthly and Yearly Temperature.

	PAROWAN.						SAINT GEORGE.						SALT LAKE CITY.					
	1891	1892	1893	1894	1895	Av.	1891	1892	1893	1894	1895	Av.	1891	1892	1893	1894	1895	Av.
January	22.8	30.9	34.0	25.1	25.4	27.6	37.4	37.8	41.2	33.6	34.1	36.8	28.8	25.8	27.6	29 0	29.7	28.2
February	26.9	35.8	30.3	23.2	28.6	29.0	38.8		43.6	36.3	40.9	39.9	30.6	33.6	28.5	25.6	30.	29.7
March	36.4	42.7	37.6	38.5	37.6	38.6	46.9	51.5	50.2	50.0	47.8	49.3	38.0	43.4	39.3	41.1	40.8	40.5
April	47.0	46.6	45.3	47.0	48.5	46.9	54.3	59.1	55.8	57.8	57.6	56.9	49.6	47.4	45.9	48.1	51.2	48.4
May	56.7	56.7	54.0	57.8	55.8	56 2		67.1	67.1	67.7	66.1	67.0	60 0	55.4	55.1	61.2	57.9	57.9
June	62.4	66.6	67.2	59.5	61.7	63 5	71.6	76.1	79.8	70.2	72.5	74.0	62.0	65.8	67.0	63 9	63.5	64.4
July	71.0	72.8	72.8	70.2	68.4	71.0	82 0	83.2	85.6	82.9	79.8	82.7	73.3	76 0	74.7	74 6	72.6	74.2
August	72.8	72.0	70.4	68.3	70.8	70.9		83.9	82.8	79.2	80.5	81.6	74.4	75.4	73.2	75.4	74.8	74.6
September	60.4			58.8	60.4	59.9	74.1	77.4	72.2	69.0	70.2	72.6	65.0	69.6	63.0	61.0	63.8	64.5
October	51.5	45.5		50.6	49.3	49.2	61 7		57.7	60.9	57.3	59.4	53.2	51.8	52.0	53.2	54.3	52.9
November	43.8	40.2	36.2	43.0	34.3	39.5	50.6		45.2	48.5	42.2	46.6	44.2	42.2	39.4	45.6	37.8	41.8
December	25.4	27.7	34.0	28.6	23.3	27.8	36.0		40.8	39.4	31.8	37.0	28.6	27.6	36.3	31 4	26.4	30.1
Average	48.1		48.2	47.5	47.0	48.3			60.2	58.0	56.7	58.6	50.6	51.2	50.2	50 8	50.2	50.6

Table No. 13.

Average Temperature, Altitude, and Number of Years Record.

	Altitude.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean	Av. No. of years record.
Corinne	4232	24.9	29.6	40.2	51.	61.7	72.0	80.6	77.8	66.2	51.6	36.3	29.1	51.8	26
Fillmore	5100	27.	27.7	39.4	48.6	57.7	65.9	73.7	74.4	65.2	52.8	41.1	29.1	50.2	4
Fort Duchesne	4941	9.8	18.9	36.6	49.2	57.3	65.6	71.1	69.8	62.6	47.8	33.8	20.5	45.3	7
Heber	5440	18.4	16.5	31.5	43.5	53.2	59.1	66.6	65.4	55.3	45.4	35.7	20.8	42.6	3
Levan	5010	20.5	22.6	35.1	45.8	56.1	64.1	72.4	71.2	61.2	47.5	35.2	24.5	46.3	5
Loa		23.2	24.5	33.1	41.2	51.4	59.3	66.4	64.4	54.7	42.9	32.4	32.7	43.8	4
Logan	4775	22.7	20.8	34.7	46.9	55.6	61.5	70.3	70.	61.3	51.	37.6	25.4	46.5	5
Moab	4000	28 3	35.5	45.6	55.1	65.6	72.	78.7	74.4	64.6	52.4	38.8	32.9	53.7	6
Ogden	4307	28.0	32.5	41.3	52.8	62.3	71.4	79.9	77.4	66.2	52.4	38.8	31.6	52.9	25
Parowan	5970	27.6	29.	38.6	46.9	56.2	63.5	71.0	70.9	59.9	49.2	39.5	27.8	48.3	5
St. George	2880	36.0	40.2	49.5	56.8	64.4	72.9	79 3	79.0	67.9	56.3	45.7	34.2	56.9	8
Salt Lake City	4354	27.8	32.8	41.6	49.2	58.5	67.8	75.8	74.8	64.3	53.3	40.1	32.2	51.5	31
State		24.5	27.5	38.9	49.0	58.3	66.2	73.8	72.5	62.5	50.2	38.8	28 4	49.1	

EXTREMES OF TEMPERATURE.

The mean temperature, whether it be the daily mean, the monthly mean, or the annual mean, frequently gives a very erroneous idea of the temperature of a locality, at any rate a very incomplete view. For example, the mean daily temperature at two separate locations may be 50 degrees, while in the one case the thermometer may show a range of 40 degrees, and in the other a range of only 20. That is, in the former case the temperature would reach 70 during the day and 30 during the night; in the latter case, the highest day temperature would be 60 degrees and the lowest 40; in the one case the thermometer registered 2 degrees below freezing, and in the other 8 degrees above, a very important difference from an agricultural point of view, though judging from the mean temperature the climate is exactly alike at both places. The extremes of temerature are, therefore, a very important consideration to the agriculturist and especially to the horticulturist. In the example above cited the difference would be the difference between a good fruit crop and no fruit crop at all. In a dry climate, or in a climate where the relative humidity is low, the tendency is towards a greater daily range of temperature, though not necessarily a greater monthly or yearly range.

Diagram 3 has been prepared to show how high the temperature runs in summer and how low in winter. It shows the average of five years ending 1895. The minimum temperature means the lowest point reached by the thermometer during the winter, and the average of the five winters is shown in the diagram. The maximum temperature means the highest point reached by the thermometer during the summer, and the average of the five summers will come near representing what may be looked for in the way of high summer temperature. From the diagram it will be seen that St. George has the highest summer temperature, as well as the highest minimum temperature. Of the eleven places represented there are only three that do not

have a minimum temperature lower than zero, namely, St. George, Salt Lake City, and Ogden.

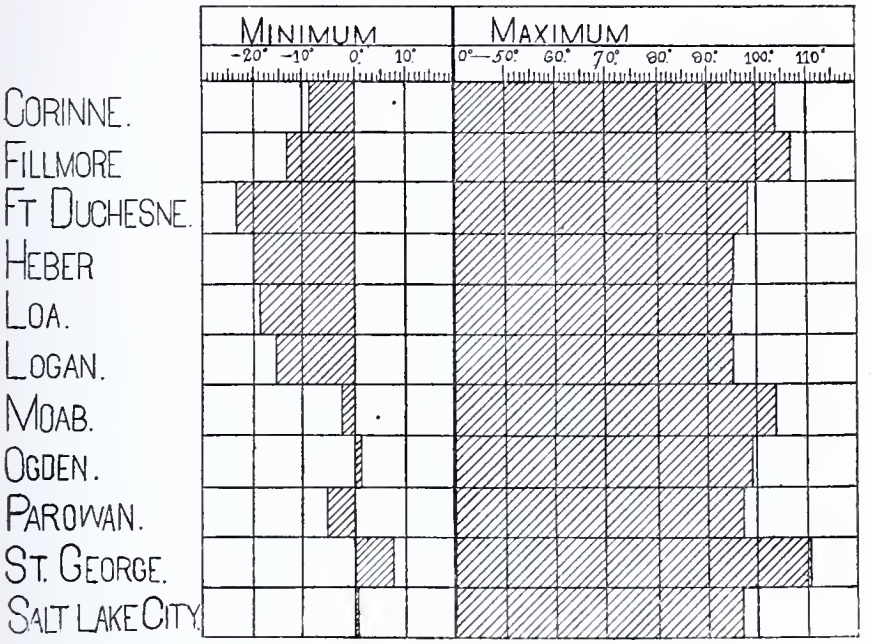


FIG. 3.

Table No. 14 gives the extreme temperatures at the several points for each month of the years 1891 to 1895 inclusive, together with the average of the extremes for the five years. At the bottom of the table the highest and lowest temperatures for the year are given.

Table No. 14.

Extremes of Temperature and Averages for five years.

		CORINNE.						FILLMORE.					
		1891	1892	1893	1894	1995	Av.	1891	1892	1893	1894	1895	Av.
Jan.	Max.	42	45	45	48	45	45.0			60	58	55	57.7
	Min.	3	−12	0	3	−6	-2.4			−5	−16	−16	-12.3
Feb.	Max.	49	52	47	55	46	50.0			58	50	67	60.3
	Min.	−12	8	−8	−5	−2	-3.8			3	−11	−17	-5.0
Mch.	Max.	65	64	66	76	70	68.2			80	75	78	77.7
	Min.	17	27	22	20	25	22.6			13	3	−2	4 7
April	Max.	74	76	74	89	78	78.2		77	82	86	85	82.5
	Min.	29	30	32	39	27	31.4		24	19	17	7	16.7
May	Max.	87	85	79	97	85	86.6		92	94	93	94	93.2
	Min.	40	37	35	45	45	41.0		32	27	22	19	25.0
June.	Max.	87	98	98	98	97	95.6		106	99	98	99	100.5
	Min.	50	38	50	55	50	48 6		35	34	27	22	29.5
July	Max.	99	101	104	107	99	102.0		108	106	104	110	107.0
	Min.	50	60	60	60	50	56.0		44	39	40	36	39.7
Aug.	Max.	101	99	104	110		103.5		108	102	104	106	105.0
	Min.	59	48	53	65		56 2		39	45	42	39	41.2
Sept.	Max.	92	92	98	79	90	90.2		104	99	94	99	99.0
	Min.	38	53	41	40	33	41.0		41	27	28	9	26.2
Oct.	Max.	72	86	90	77	82	81.4		92	92	88	91	90.7
	Min.	22	28	30	30	30	28.0		22	21	14	27	21.0
Nov.	Max	65	68	72	62	60	65.4		76.	86	77	75	78.5
	Min.	11	0	15	10	17	10.6		9	3	7	6	6.3
Dec.	Max.	42	50	58	48	48	49.2		63	67	62	50	60 5
	Min.	−8	−5	10	0	−5	-1.6		−5	3	−6	−4	-3
Year.	Max.	101	101	104	110	99	103		108	106	104	110	107
	Min.	−12	−12	−8	−5	−6	-8.6			−5	−16	−17	-12.7

		FORT DUCHESNE.						HEBER.					
		1891	1892	1893	1894	1895	Av.	189.	1892	1893	1894	1895	Av.
Jan.	Max.	44	40		31	43	39.5			48	56	48	50.7
	Min.	−13	−17		−24	−25	-19.7			−12	−21	−24	-19 0
Feb.	Max.	47	57		39	41	46.0			50	40	54	48.0
	Min.	−19	−1		−18	−33	-17.7			−10	−22	−26	-19.3
Mch.	Max.	63	68		68	70	67.2			64	68	63	65.0
	Min.		10		10	−9	3.7			0	−7	−6	-4.3
Apl.	Max.	80	75		75	76	76.5			68	76	80	74.7
	Min.		18		18	18	18.0			28	20	14	20.7
May.	Max.	86	86		85	87	86.0			84	84	86	84.7
	Min.		30		25	28	27.7			24	20	25	23.0
June.	Max.	90	97	93	90	90	93.0			90	86	95	90.3
	Min.	21	32	31	34	32	30.0			26	26	25	25.7
July.	Max.	93	97	98	98	91	96.4			94	95	95	94.7
	Min.	37	42	41	41	38	39.8			35	39	35	36.3
Aug.	Max.	94	100	97	96	97	96.8			96	91	96	94.3
	Min.	43	35	44	46	43	42.2			32	36	32	33.3
Sept.	Max.	92	91	87	88	91	89.8			84	80	88	84.0
	Min.	37	34	33	30	24	31.6			22	20	18	20.0
Oct.	Max.	74		77	72	78	75.2			74	74	78	75.3
	Min.	18		19	18	21	18.0			20	18	14	17.3
Nov.	Max.	66	63	62	65	57	62.6			68	64		66.0
	Min.	8	4	−1	18	−11	3.6			3	10		6.5
Dec.	Max.	50		55	61	29	48.7			52	48	35	45.0
	Min.	−16		−6	−15	−24	-15 2			−8	−14	−22	-14.7
Year.	Max.	98	100	98	98	97	98.2			96	95	96	95.6
	Min.	−19	−17		−24	−33	-23.2			−12	−22	−26	-20

Extremes, etc. (Continued)

		LOA.						LOGAN.					
		1891	1892	1893	1894	1895	Av.	1891	1892	1893	1894	1895	Av.
Jan.	Max.		57	58	48	51	53.5	48		49	45	42	46
	Min.		-8	-7	-17	-19	-12.7	1		2	—4	-22	-5.8
Feb.	Max.		53	55	50	53	52.7	54		46	42	47	47.2
	Min.		-13	-13	-14	-26	-16.5	-10		-10	—14	-16	-12.5
Mar.	Max.		61	72	66	69	67.0	59	63		58	73	63.2
	Min.		4	2	-7	-2	0.7	4	15	1	10	12	10.5
Apr.	Max.		73	70	78	73	73.5	86	77		74	76	78.2
	Min.		14	13	17	5	12.2	23	16	17	28	19	20.6
May	Max.		82	83	83		82 7	84	80	82	82	80	81.6
	Min.		20	23	21		22.0	32	27	29	30	32	30 0
June	Max.		95	89	90		91.3	83	95	90	85	85	87.6
	Min.		26	28	24		26.0	39	31	39	38	32	35 8
July	Max.		94	96	97	93	95.0	98	94	98	92	92	94.8
	Min.		38	40	39	33	37.5	42	44	46	48	46	45.2
Aug.	Max.		94	92	90	91	91.7	95	96	95	94	92	94.4
	Min.		34	35	39	37	36.2	45	41	36	44	45	42.2
Sept.	Max.		88	80	83	84	83.7	90	92	88	82	86	87.6
	Min.		28	24	13	16	20.2	33	42	36	32	26	33.8
Oct.	Max.		81	74	74	77	76.5	80	85	76	74	76	78.2
	Min.		8	14	9	13	11.0	26	22	28	20	28	24.8
Nov.	Max.		60	59	65	59	60.7	73	65	62	64	62	65.2
	Min.		-6	-8	8	5	-0.1	13	5	10	15	5	9.6
Dec.	Max.		53	53	46	54	51.5	50	57	54	47	41	49.8
	Min.		-19	-2	-9	-14	-11.0	-2	-15	11	—12	—7	-5
Year	Max.		95	96	97	93	95.2	98	96	98	94	92	95.6
	Min.		-19	-13	-17	-26	-18.7	-10		-10	—14	—22	-14

		MOAB.						OGDEN.					
		1891	1892	1893	1894	1895	Av.	1891	1892	1893	1894	1895	Av.
Jan.	Max.	51	50	58	58	58	55.0	46	50	60	43	45	48.8
	Min.	3	3	-2	-1	-12	-1.8	6	10	10	2	1	5.8
Feb.	Max.	64	73	56	60	64	63.4	46	55	47	42	47	47.4
	Min.	6	22	13	9	-3	9.4	0	8	2	6	6	4.4
Mar.	Max.	80	75	85	79	85	80.8	66	65	75	70	75	70.2
	Min.	14	22	16	17	19	17.6	16	22	22	20	19	19.8
April	Max.	97	87	85	89	89	89.4	78	80	68	78	82	77.2
	Min.	19	25	26	26	19	23.0	32	30	35	30	24	30.2
May	Max.	101	93	96	93	97	96.0	85	85	92	86	82	86
	Min.	42	36	36	37	35	37.2	38	35	40	34	38	37
June	Max.	107	100	103	103	99	102.4	88	96	99	87	92	92.4
	Min.	44	41	40	38	36	39.8	42	35	54	40	40	42.2
July	Max.	108	103	102	105	102	104.0	98	100	100	102	98	99.6
	Min.	51	51	50	53	52	51.4	52	50	65	50	58	55.0
Aug.	Max.	94	102	95	101	99	98.2	96	100	100	98	95	97.8
	Min.	51	43	50	55	54	50.6	60	60	65	60	60	61.0
Sept.	Max.	88	91	84	89	93	89.0	86	93	90	80	82	86.2
	Min.	43	40	39	34	32	37.6	36	58	42	40	28	40.8
Oct.	Max.	76	84	76	81	77	78.8	74	82	77	72	78	76.6
	Min.	27	24	27	25	27	26.0	28	38	35	27	32	32.0
Nov.	Max.	73	63	70	71	61	67.6	62	63	63	60	60	61.6
	Min.	14	15	15	13	17	14.8	14	18	24	22	21	19.8
Dec.	Max.	65	66	59	57	55	60.4	50	58	52	45	40	49.0
	Min.	2	5	15	10	0	6.4	-4	2	17	14	4	6.6
Year	Max.	108	103	103	105	102	104.2	98	100	100	102	98	99.6
	Min.	2	3	-2	-1	-12	-2	-4	2	2	2	1	.6

Extremes, etc. (Continued.)

		PAROWAN.						SAINT GEORGE.					
		1891	1892	1893	1894	1895	Av.	1891	1892	1893	1894	1895	Av.
Jan.	Max.	51	54	60	50	53	53.6	61	68	71	63	60	64.6
	Min.	-4	1	5	-7	-9	-2 8	14	13	14	8	10	11.8
Feb.	Max.	52	64	54	46	57	54.6	68		70	68	74	70.0
	Min.	-10	3	5	-4	-11	-3.4	10		21	11	15	14.2
Mar.	Max.	63	72	75	69	73	70.4	80	83	87	85	87	84.4
	Min.	12	9	13	6	9	9.8	22	28	26	14	18	21.6
April	Max.	80	75	77	77	78	77.4	94	86	88	91	94	90.6
	Min.	13	13	20	22	15	16.6	30	29	30	29	24	28.4
May	Max.	86	88	85	86	86	86.2		98	96	98	99	97.7
	Min.	33	27	23	27	32	28.4		38	42	32	36	37.0
June	Max.	93	102	93	90	91	93.8	109	116	105	106	106	108.4
	Min.	32	30	38	28	31	31.8	42	42	40	37	35	39.2
July	Max.	99	100	97	94	93	96.6	110	110	110	109	108	109.4
	Min.	40	43	48	50	41	44.4	60	62	41	53	50	53.2
Aug.	Max.	99	102	99	91	94	97 0		113	112	107	113	111.2
	Min.	45	44	47	44	44	44.8	.	53	56	47	45	50.2
Sept.	Max.	93			83	90	88.6	104	101	97	99	103	100.8
	Min.	34			28	23	28.3	44	53	39	33	25	38.8
Oct.	Max.	80			78	82	80.0	90		90	94	95	92.2
	Min.	21			22	21	21.3	35		28	24	20	26.7
Nov.	Max.	74	69	64	67	62	67.4	80		76	82	74	78.0
	Min.	14	2	8	15	3	8.6	25		17	16	11	17.2
Dec.	Max.	57	60	63	58	50	57.6	71		70	64	64	67.2
	Min.	-5	-5	8	2	-4	-0.8	8		15	13	0	9.0
Year.	Max.	99	102	99	94	94	97.6		113	112	109	113	111.7
	Min.	-10	-5	5	-7	-11	-5.6	8		14	8	0	7.3

		SALT LAKE CITY.					
		1891	1892	1893	1894	1895	Av.
Jan.	Max.	46	45	48	50	52	48.2
	Min.	12	2	4	-1	0	3.4
Feb.	Max.	55	60	49	43	54	52.2
	Min.	3	12	5	6	3	5.8
Mar.	Max.	64	68	73	67	76	69.6
	Min.	12	26	23	20	16	19.4
April	Max.	79	73	72	77	79	76.0
	Min.	24	26	26	30	23	25.8
May	Max.	86	85	86	85	83	85.0
	Min.	38	36	34	33	33	34.8
June	Max.	84	98	92	89	90	90.6
	Min.	41	38	42	40	38	39.8
July	Max.	98	96	99	96	95	96.8
	Min.	45	55	52	53	52	51.4
Aug.	Max.	95	100	96	95	97	96 6
	Min.	50	45	52	56	52	51.0
Sept.	Max.	89	90	86	85	90	88.0
	Min.	38	48	33	37	29	37.0
Oct.	Max.	77	80	77	77	81	78.4
	Min.	30	30	30	28	32	30.0
Nov.	Max.	72	66	64	64	66	66.4
	Min.	20	18	13	19	20	18.0
Dec.	Max.	51	55	57	56	46	53.0
	Min.	0	-1	18	9	2	5.6
Year	Max.	98	100	99	96	97	98
	Min.	0	-1	4	-1	0	.4

RANGE OF TEMPERATURE.

Table No. 15 has been compiled to show the range of temperature for the five years ending 1895. It shows the average range for each month for the five years, the average range for all the months of the year, and the yearly range. The line at the bottom gives the average of all the places.

TABLE NO. 15.

Monthly and Yearly Range of Temperature, 1891-5.

	Jan.	Feb.	Mch.	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Av. M'th.	Y'rly
Corinne	47.4	53.8	45.6	46.8	45.6	47.0	46.0	47.3	49.2	53.4	54.8	50.8	49.0	111.6
Fillmore	70.0	65.3	73.0	65.8	68 2	71.0	67.3	63.8	72.8	69.7	72.2	63.5	68.5	119.7
Fort Duchesne	59.2	63.7	63.5	58.5	58.3	63 0	56.6	54.6	58.2	57.2	59.0	63.9	59 6	121.4
Heber	69.7	67.3	69.3	54.0	61.7	64.6	58.4	61.0	64.0	58.0	59.5	59.7	62.3	115.6
Loa	66.2	69.2	67.7	61.3	60.7	65.3	57.5	55.5	63.5	65.5	60.8	62.5	63.0	113.9
Logan	51.8	59.7	52.7	57.6	51.6	51.8	49.6	52.2	53.8	53.4	55.6	54.9	53.7	109.6
Moab	56.8	54 0	63.2	66.4	58.8	62.6	52.6	47 6	61.4	52.8	52.8	54.0	56.9	106.2
Ogden	43.0	43.0	50.4	47.0	49 0	50.2	44.6	36.8	45.4	44.6	41.8	42.4	44.8	99.0
Parowan	56.4	58.0	60.6	60.8	57.8	61.0	52.2	52.2	60.3	58.7	58.8	57.8	57.9	103.2
St. George	52.8	55.8	62.8	62.2	60.7	69.2	56.2	61.0	62.0	65.5	60.8	58.2	60.6	104.4
Salt Lake City	44.8	46.4	50.2	50.2	50.2	50.8	45.4	45.6	51.0	48.4	48.4	47.4	48.2	97.6
Average	56.2	57.8	59.9	57.3	56.6	59.7	53.3	52.5	58.3	57.0	56.8	5.59	56.8	109.3

SENSIBLE TEMPERATURE.

The air temperature of summer, as it is commonly recorded, is not necessarily the sensation of heat experienced by human beings; though as records are kept and published, this is about the only datum we have from which to form estimates of the relative pleasantness of two localities as regards temperature. Did the temperature of the body respond to the temperature of the air, human life could not long exist in sections of the country where the air temperature exceeds 100 degrees, for the body seeks to maintain a temperature of about 98 degrees, or "blood" heat, and anything more than that is inimical to the existence of life. The accuracy of the thermometer in the arid regions is frequently challenged by visitors from the East, because they do not experience as much discomfort as in the humid regions, though the conditions as to air temperature may be in favor of the latter. But where the thermometer has been closely observed in the two localities there is enough evidence of the fact that there is often a very decided difference in the sensation of heat experienced during the warm months, though the air temperature may be exactly the same at the two places. It is no mere theory, but an actual condition, and only the person who has lived in the two localities can testify to the fact, though he may not be able to explain the phenomenon nor convince the skeptical New Yorker of its truth.

During the past two or three years, however, meteorology has come to the assistance of the arid states, and, though the data are meagre as yet, it is believed that the phenomenon of hot weather "feeling" pleasant ond cooler weather "feeling" hotter, can now be satisfactorily explained.

To illustrate this difference in fact, we may turn to the records of the warm spell of last August (1896) at New York city, and compare the same with the warmest month at Salt Lake City. The highest temperature at New York during the past summer was 94 degrees, at Salt Lake City 96 degrees. This was somewhat higher than the thermometer usually runs in New York, but the average of Salt Lake City is 98 degrees, as will be seen by reference to table No. 14. During the week ending August 15 the average daily maximum temperature at New York was 90. This was the warmest week in the season. The warmest seven days at Salt Lake City during the past summer occurred July 8 to 14. The highest was 96, and the average 93. The following table gives the daily maxima for the warmest seven days at the two places, and the average:

New York.	Salt Lake City.
92	92
90	94
92	90
94	94
92	96
88	94
84	90
Average, 90	93

At New York there occurred during this week, as shown by the reports of the health department, 648 deaths from sunstroke, and in Brooklyn 215, while at Salt Lake City during the week ending July 14 no fatalities are recorded; at the former city a weekly maximum temperature of 90 degrees resulted in a frightful mortality, while a weekly temperature of 93 at Salt Lake City was not unduly oppressive. During the week ending August 22, there were 66 deaths from the same cause in New York and 99 in Brooklyn.

It is therefore evident that the thermometer as commonly used is a very imperfect means of judging or estimating the

true condition of the temperature as it affects the human body.

The term "sensible temperature" is of recent origin and is used to describe the temperature felt on the surface of the body, or the temperature that is actually felt. The wet bulb thermometer is used to indicate this temperature. This is an ordinary thermometer the bulb of which is covered with a piece of muslin, the end of the muslin being immersed in a cup of water. The evaporation takes place on the bulb, and the greater the evaporation the greater the cooling effect on the bulb. In other words, the temperature of the wet bulb is the temperature at which evaporation takes place. Evaporation is a cooling process. Prof. Cleveland Abbe, editor of the Monthly Weather Review, states: "The rapid evaporation from the skin in dry, hot weather reduces the temperature of the layer of nerve cells at the surface of the skin;" * * * "The reduction of temperature, or sensible coolness, is apparently proportional to the difference between the dry and wet bulb thermometers," the sensible temperatures "corresponding to the temperature of persons standing in the shade of trees or houses, exposed to a natural breeze of at least six miles per hour." Then the same writer says, "The temperature of the wet bulb thermometer and its depression below the dry bulb are the fundamental data for all investigations into the relation between human physiology and atmosphere." Prof. Davis of Harvard University, author of a recent book on meteorology, states: "When the air is warm our bodily temperature would rise too high if it were not for the cooling of the skin by continual evaporation from its surface."

The more rapid the evaporation the greater the cooling effect upon the body. In a warm, dry climate the most favorable conditions exist for active evaporation. The greater the humidity of the atmosphere the less the evaporation because of the decreased capacity of the air for taking up moisture. The wind is also an important factor in promoting evaporation. The use of the fan in an audience where

the atmosphere is still, illustrates the effect upon evaporation produced by currents of air. No matter how vigorously applied, or in what numbers, the fan will not reduce the temperature of an auditorium, but it has, nevertheless, a decidedly cooling effect upon the person using it because it promotes evaporation from the surface of the skin, and, by a process known in physics as "liberating latent heat," reduces the temperature of the surface of the body. The term evaporation should not be confused with perspiration.

The use of the wet bulb thermometer for determining the sensible temperature was first advocated I believe by Prof. Mark Harrington, former chief of the Weather Bureau, in a paper read before the American Climatological Society in 1894.

The present chief of the Weather Bureau, Prof. Willis L. Moore, recognizing the importance of the subject, shortly after assuming charge of the office in September, 1895, issued instructions to the observers of the weather service to begin telegraphing the readings of the wet bulb thermometer at 8 a. m., and at 8 p. m., and these are now incorporated in the daily weather map issued by the Weather Bureau, alongside of the readings of the air thermometer.

The charts given herewith were prepared from data furnished monthly to the Weather Bureau, being the average values of the readings at 8 a. m., and 8 p. m., seventy-fifth meridian time. The chart does not represent the sensible temperature during the warmest part of the day; but as the reduction of temperature for evaporation is greatest during the middle of the day when the relative humidity is lowest and the evaporation greatest, the figures are probably not more than two or three degrees lower than the highest daily sensible temperature. Some information on this point will be obtained by reference to table No. 16 which gives the wet bulb readings or the sensible temperature at this Station at 8:30 a. m., 1:30 p. m., and 5:30 p. m., for July and August, 1896. On July 11, which was the warmest day of the summer, judging by the air thermometer, the air

Chart 2.

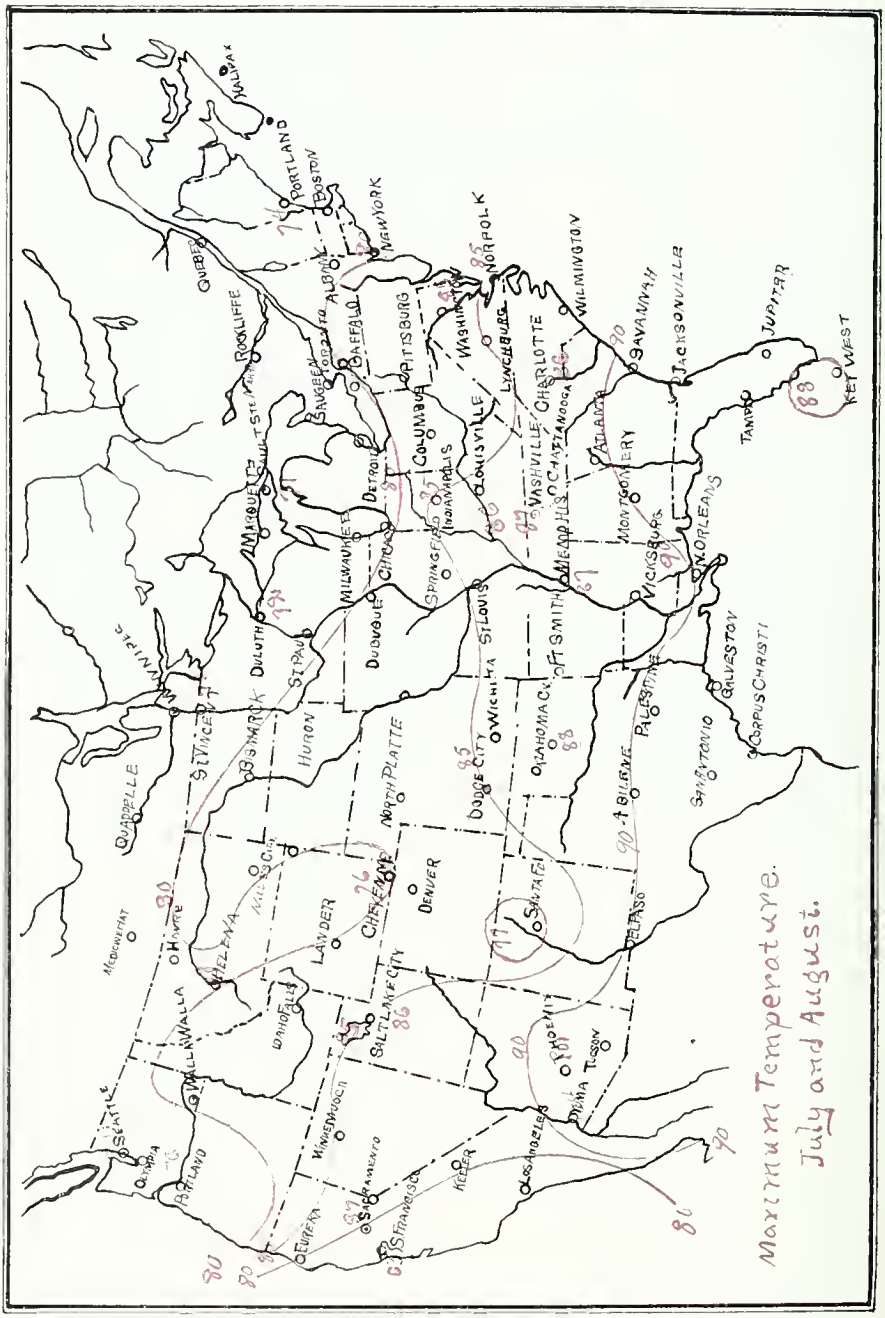
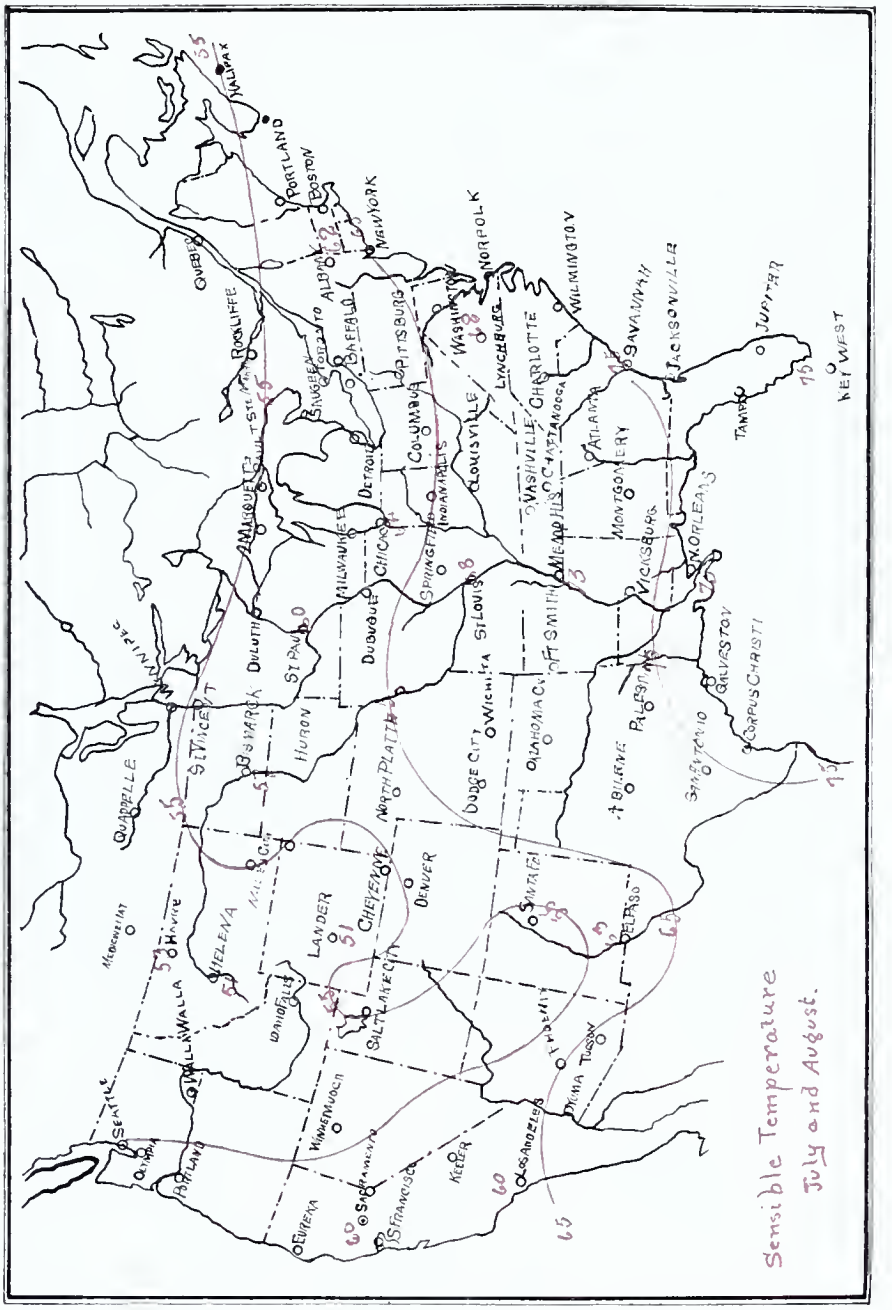


Chart 3.



felt by a person favorably situated was from 45 to 46 degrees lower than that shown by the thermometer in the shade. Again on August 4 and 5 the maxima were 118 and 114 degrees; while the temperatures of free evaporation, or sensible temperatures, were only 70 and 67 degrees.

It is thus apparent that the observations on temperature heretofore made under the auspices of the government Weather Bureau convey a very superficial, if not erroneous, impression of the important climatic element of temperature. It is seen that though the air temperature in our dry climate is considerably higher than that of the humid states of the East, the sensible temperature, the temperature actually felt by the human body, is so much lower in the arid region that it may be positively pleasant in the mountain valleys and at the same time decidedly oppressive, often fatally so, in the humid East.

Table No. 16.

	JULY.												AUGUST.											
	8:30 a. m.				1:30 p. m.				5:30 p. m.				8:30 a. m.				1:30 p. m.				5:30 p. m.			
	Dry.	Wet.	R. H.	D. P.	Dry.	Wet.	R. H.	D. P.	Dry.	Wet.	R. H.	D. P.	Dry.	Wet.	R. H	D, P	Dry	Wet	R. H	D. P.	Dry.	Wet.	R. H.	D. P
1	67	55	45	45	83	60	23	42	88	66	30	53					85	67	38	57	87	69	40	59
2	61	53	58	46	73	52	19	29	81	65	41	55												
3	58	49	51	40	78	61	36	49	88	67	32	55	71				77	65	52	58	72	60	49	52
4									83	65	37	54	62	56	69	52	71	59	43	51	71	58	45	48
5									85	68	41	59	60	53	63	47	79	64	43	55	80	65	44	56
6	69	56	43	46	69	64	76	61	80	70	61	65					80	64	41	54	81	65	41	55
7	68	63	76	60	85	69	44	61	81	69	54	63	65	58	65	53	78	65	49	57	78	64	46	55
8	70	63	68	59	85	69	44	61	85	67	38	57	84	57	14	30	79	64	43	55	75	62	47	54
9	70	63	68	59	82	67	45	59	85	68	41	59					76	63	48	55				
10	70	62	64	57	86	69	42	60	88	67	32	55	67	59	62	54	82	66	42	57	81	66	44	57
11	72	63	61	58	88	69	38	59	94	74	39	65	66	59	66	54	86	68	39	58	85	67	38	57
12	75	64	55	57									62	55	64	50	85	68	41	59	89	75	52	69
13	62	61	95	60	74	68	74	65	74	63	54	56	64	57	65	52	87	71	45	63	82	67	45	59
14	63	60	84	58	78	68	60	63	67	60	66	55	68	59	58	53	87	70	42	61	84	67	44	57
15	66	60	71	56	76	66	59	61	80	70	61	65	73	64	61	59	89	72	44	64	88	71	43	63
16					78	67	56	61	78	68	60	63	73	64	61	59	83	71	55	65	71	65	72	62
17					82	70	55	64	85	70	47	62	70	63	68	59	85	71	50	64	74	67	70	63
18					85	69	44	61	84	68	44	59	67	63	80	61	78	69	63	65	69	64	76	61
19					84	66	38	55					62	60	89	59	84	70	49	63	79	68	57	62
20	63	58	74	55	84	67	41	57	81	65	41	55	65	61	80	59	71	68	86	67	67	65	90	64
21	66	57	57	50	85	67	38	57	86	67	36	56	63	61	89	60	78	67	56	62	64	61	85	59
22	75	64	55	57	70	63	68	59	74	66	66	62	58	55	83	53	72	62	57	56	73	61	50	53
23	70	63	68	59	74	66	66	62	74	63	54	56	59	54	72	50	78	65	49	57	79	62	37	51
24					79	62	31	46	75	64	55	57	60	53	63	47	77	65	52	58	74	63	54	56
25	70	60	55	53	71	64	68	60	67	60	66	55	61	54	63	48	81	66	44	57	79	66	50	59
26					75	65	58	59					62	56	69	52	78	65	49	57				
27	67	60	63	47	76	63	48	55	73	61	50	53	64	58	70	54	84	67	44	57	84	65	35	53
28	67	62	76	59	75	63	51	56	73	63	57	57	68	59	58	53	78	65	49	57	66	62	80	60
29	62	57	74	53	83	64	34	52	80	65	44	56	69	62	67	58	75	65	58	59	78	66	53	59
30	55	54	94	53	66	58	61	52	65	60	75	57									78	66	53	59
31	60	55	73	51	81	67	48	59					66	60	71	56	77	64	35	48	77	64	49	56
	66	59	66	54	79	65	49	57	80	66	49	58	66	58	67	53	79	66	49	58	77	65	53	58

PRECIPITATION.

It is asserted in the school books that human life reaches its fullest development in the temperate zone where the rainfall is neither scanty nor excessive, notably in the eastern states. In tropical countries where the rainfall is excessive, often exceeding 100 inches per annum, it will be easily understood that vegetation may become so luxuriant as to make progress difficult. The reverse condition—extreme aridity—may be equally fatal to the fullest development of human occupation. But in communities, such as the Rocky Mountain states, where a scanty rainfall is supplemented, as occasion demands, by artificial watering, thereby guaranteeing the crops against failure either from exessive rainfall or excessive drouths, conditions that none of the so-called humid states are exempt from, it may well be doubted if the school books should not be revised and made to read that man obtains his fullest development where the conditions are such that the dangers and losses incident to the uncertainties of the climatic elements are reduced to the minimum. In after years, when the experiment has been worked out under the same government and civilization, and by the same race, the relation between climatic conditions and the development of human occupation, will afford a most interesting study.

The word "precipitation" is used in weather records to indicate the moisture that falls upon the ground, whether in the form of rain or snow. As already explained, the moisture that falls as snow is melted and measured as rain is measured, and the whole is called precipitation.

Figure 4 shows the annual amount of precipitation for each of the twelve stations. This shows that Levan, Juab county, receives more precipitation than any of the other points, Heber next, and Salt Lake City third. Fort Duchesne, Loa, Moab, and St. George are very dry.

ANNUAL PRECIPITATION

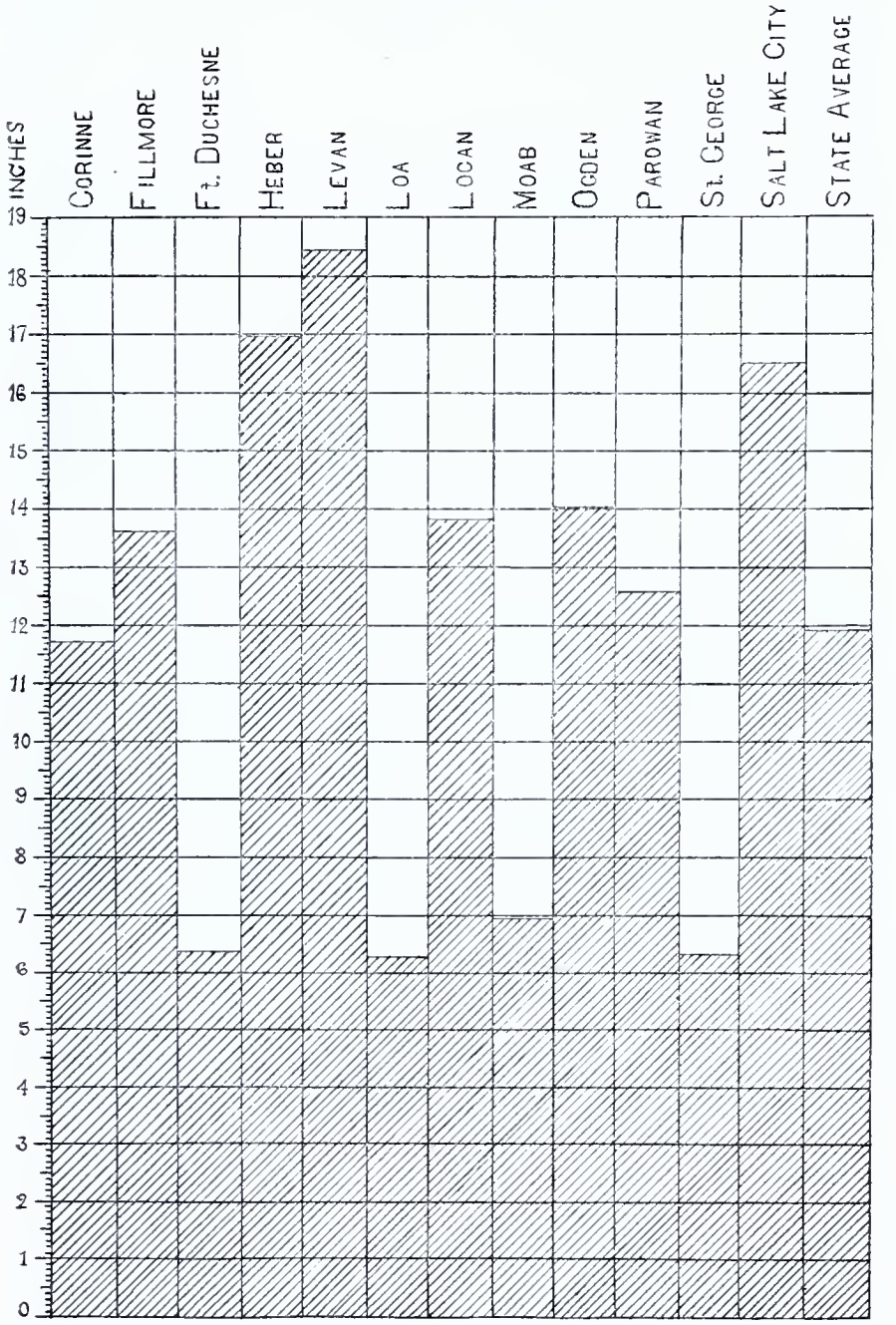


FIG. 4.

Figure 5 shows the average annual precipitation by months for the state, or rather for the twelve stations embraced in this review. December is the wettest month, while June is the driest.

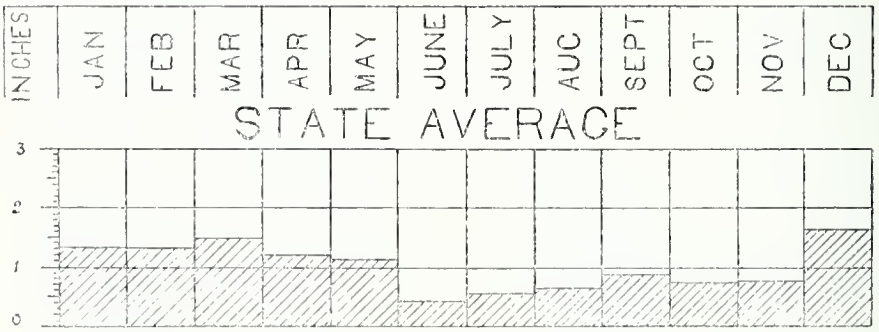


Fig. 5.

Diagram 6 shows the average monthly precipitation at each station.

These diagrams represent the average precipitation for all the years for which observations have been made, the length of the record being shown in Table No. 18.

Table No. 18 gives the average monthly precipitation, the annual total, and the state average, together with the length of record for each station. Table No. 17 gives the amount of precipitation in detail for the five years ending 1895 and the average of the five years.

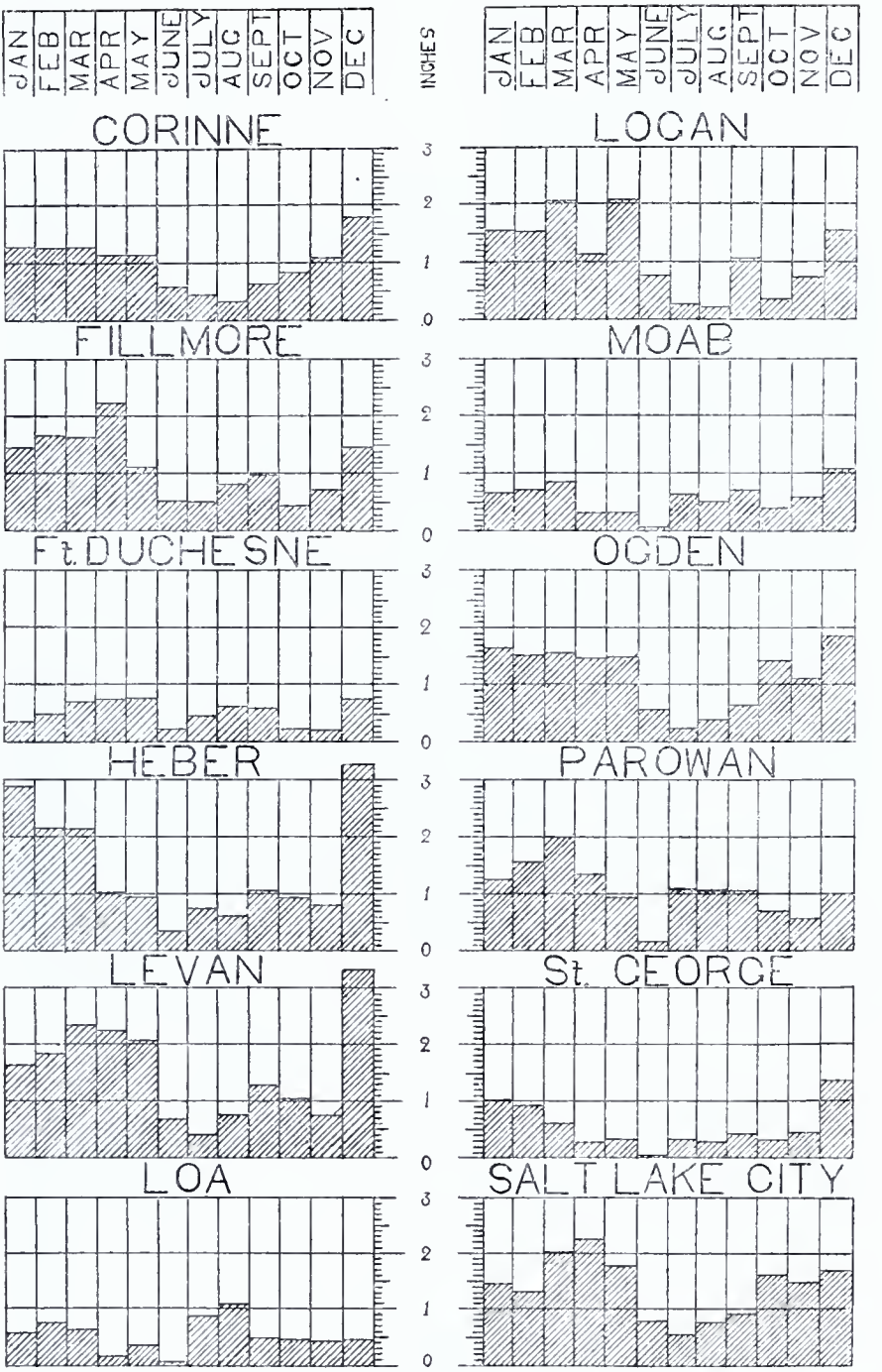

JAN
FEB
MAR
APR
MAY
JUNE
JULY
AUG
SEPT
OCT
NOV
DEC
INCHES
CORINNE
LOGAN
FILLMORE
MOAB
Ft. DUCHESNE
OGDEN
HEBER
PAROWAN
LEVAN
St. GEORGE
LOA
SALT LAKE CITY
0
1
2
3

FIG. 6.

Table No. 17.

Monthly and Annual Precipitation.

	CORINNE.						FILLMORE.					
	1891	1892	1893	1894	1895	Av.	1891	1892	1893	1894	1895	Av.
Jan	1.45	.90	.83	1.15	1.30	1.13			.81	.70	1.93	1.15
Feb	1 90	1.25	1.50	1.90	.30	1.37			1.51	.56	2.15	1.41
Mar.	2.15	1.65	3.38	1.85	1.60	2.13			2.89	1.04	2.06	2.00
April	1.90	.45	1 01	.61	.25	.84		2.11	2 09	2.43	1.23	1.97
May	1.30	2.25	1.20	.42	1.60	1.35		2.03	1.53	.64	1.51	1.43
June	3.07	2.35	.10	.30	.45	1.25		.82	0.00	2.04	.80	.91
July	.30	1.35	.00	.00	.12	.35		.29	.48	.34	.56	.42
August	.10	.05	.00	.10	.00	.05		.47	1.71	1.19	.97	1.03
Sept	1.95	.20	1.20	1.58	.48	1.08		.06	1.21	1.94	1.66	1.22
October	.02	.82	.30	.36	Tr	.30		1.07	.46	.41	.93	.72
Nov	.05	1.05	1.24	.15	.65	63		.53	1.11	31	1.46	.85
Dec	3.60	2.30	1.85	1.34	.70	1.96		1.20	1.79	1.77	1.10	1 46
Total	17.79	14.62	12.61	9.76	7.45	12.44		8.58	15.59	13.37	16.36	14.62

	FORT DUCHESNE.						HEBER.					
	1891	1892	1893	1894	1895	Av.	1891	1892	1893	1894	1895	Av.
Jan.	.22	.46	.42	.08	.09	.25			1.80	3 65	3.22	2.89
Feb	.28	.30	.44	.19	.03	.25			2.95	1.60	1.93	2.16
March	.57	.78	3.10	.56	.09	1.02			3.35	1.65	1.45	2.15
April	.99	1 24	2.01	Tr	.00	.85			2.15	.41	.48	1.01
May	.96	1.35	.92	.29	1.53	.99			.76	.54	1.54	.95
June	.34	.03	0.00	.34	1.02	.35			.02	.79	.25	.35
July	.24	.16	.47	.26	.17	.26			.27	.62	1.37	.75
August	1.42	.08	57	.30	.20	.51			.68	1.16	Tr	.61
Sept	1.46	Tr	.36	1.88	.03	.75			.28	2.47	.50	1.08
October	.00		.16	.34	.13	.16			.73	1.79	.40	.94
Nov.	.00	.14	24	.00	90	.26			1.60	.00		.80
December	1 06	.46	.49	.69	.31	.60			3.95	2.60		3.28
Total	7 54	5.46	9.02	4.84	4.50	6.25			18.54	17.19	11.14	16.97

	LEVAN.						LOA.					
	1891	1892	1893	1894	1895	Av.	1891	1892	1893	1894	1895	Av.
Jan.	1 73	1.29	1.28	1.70	1 60	1.52		.35	.40	.13	1.42	.57
Feb	2 88	.55	2.60	1.55	2 20	1.96		.28	1.12	.55	1.00	.74
March	1.46	2.90	3.42	1.20	3.50	2.50		.25	.52	1.41	.35	.63
April	1.38	1.68	2 69	2.30	5.10	2.62		.15	.25	.13	.05	.15
May	1.10	1.85	1.12	.96	7.18	2.44		.76	Tr	.25		.33
June	1.27	.47	.00	1.71	.28	.75		.05	.00	.19		.08
July	.32	.20	.40	.95	.84	.54		.32	1.42	1.05	.71	.87
Aug.	.14	02	1 68	.89	1.04	.75		.12	2.25	1.56	.39	1.08
Sept	3.59	Tr	1.17	2 87	.91	1.71		.00	.83	.37	.77	.49
Oct	.00	1.80	.20	.85	.89	.75		.37	.00	.49	1.00	.46
Nov	07	.60	.96	.00	1 63	.65		.15	1.08	.00	.50	.43
Dec	2.80	2.38	1.85	2.75	.95	2.15		.25	.30	.79		.45
Total	16.74	13.74	17.37	17.73	26.12	18.34		3.05	8.17	6.92	6.19	6.28

Table No. 17 (Contd.)

	LOGAN.						MOAB.					
	1891	1892	1893	1894	1895	Av.	1891	1892	1893	1894	1895	Av.
Jan ...			65	1.86	2.13	1.55	.60	1.20	.72	.33	.64	.70
Feb			2.45	1 65	.45	1.52	.57	.71	.34	60	.89	.62
March...			2.64	1.72	1.71	2.05	.40	1.41	.53	.74	1.57	.93
April ..	.00	.99	2.16	1.41	1.05	1.12	.11	.60	.34	.58	02	.33
May	2.48	3.00	1.73	.83	2.27	2.06	.39	.93	.76	.68	.35	.62
June	1.16	1.36	.14	.74	.51	.78	.07	Tr	Tr	.24	.12	.09
July. ...	.13	.34	.01	28	.56	.27	1.35	.37	.89	.02	1.14	.75
Aug	.19	.00	.11	.58	.18	.21	.43	.20	1.11	.66	11	.50
Sept.....	1.44	.30	1.67	2.60	1.96	1.60	2.41	Tr	1 23	.69	36	.95
Oct	.20	.32	.59	.67	.04	.36	Tr	.41	.05	.79	.47	.34
Nov	.57	.50	.92	Tr	1.70	.74	.00	.37	1.46	.00	1.38	.64
Dec ..		1.70	1.44	2.13	.95	1.55	.82	.41	.77	1.23	.35	.72
Total .	6.17	5.54	14.51	14.47	13.51	13.81	7.15	6.61	8.25	6.56	7.40	7.19

	OGDEN.						PAROWAN.					
	1891	1892	1893	1894	1895	Av.	1891	1892	1893	1894	1895	Av.
January .	1.45	1.70	.73	3.08	1.85	1.76	1.46	.47	.84	1.65	1.94	1.27
Feb	2.23	1.22	2 72	.75	.15	1.41	2.07	1.03	1.03	.85	2.82	1.56
March ...	5.12	.81	3.10	2.45	1.60	2.62	2.57	1.79	1.23	2.65	1.93	2.03
April.	2.76	1.02	1.40	2.05	.10	1.47	1.57	2.03	1.42	1.27	.47	1.35
May	2.56	.89	.95	.94	2.35	1.54	1.14	.83	1.34	.55	.87	.95
June	2.12	1.55	.00	.80	.68	1.03	.20	.04	.00	.57	.06	.17
July.....	.10	.80	Tr	Tr	.36	.25	1.24	.66	2 03	.78	.70	1.09
August ..	.14	.00	Tr	.65	.10	.18	.76	1.24	1 65	1.40	.23	1.06
Sept	2.16	.25	1.05	1.77	.50	1.15	2.10		1.11	72	.29	1.04
October..	.25	4.05	.95	1.00		1.56	.00	2.32	Tr	.65	.58	.71
Nov.	.33	.75	1.45	.25	1.71	.90	.00	.20	1.38	Tr	1.28	.57
Dec ..	3 90	3 05	3.28	2.30	.85	2.68	1.13	.39	.72	1.88	.90	1.00
Total ...	23.12	16.89	15.03	16.04	10.25	16.55	14.24	11.00	12 80	12.97	12.07	12.55

	SAINT GEORGE.						SALT LAKE CITY.					
	1891	1892	1893	1894	1895	Av.	1891	1892	1893	1894	1895	Av.
January..	.00	1.28	.77	21	1.99	85	.74	1.61	.82	1.31	1.32	1 16
Feb ...	2.15		1.20	.40	1.21	1.24	.76	.68	1.64	.83	.85	.95
March ...	.10	.82	1.66	.18	.84	.72	4 66	2.21	2.68	1.73	.81	2.42
April ...	.00	.15	.15	.01	.32	.13	1.49	1.90	2.72	1.67	.73	1.70
May		.20	.11	.00	.54	.21	72	1.65	1.68	1 22	2.29	1.51
June	.00	.00	Tr	.00	.04	.01	1.08	1.21	.04	1.38	.99	.94
July	1.15	.11	.81	.26	.06	.48	.47	Tr	1.19	.82	.42	.58
August...		.12	.61	.49	.00	.31	.46	.05	.71	.87	.02	42
Sept ...	1.60	.00	Tr	.04	.02	.33	1.19	.12	1.30	2.87	.95	1.29
October..	.00		.09	.06	.12	.07	1.26	1.58	1.02	1.01	.24	1.02
Nov ..	.00		.05	.00	1.01	.26	.90	.72	1.18	.28	2.44	1.10
December	.40		1.28	1 90	.35	.98	2.19	2 35	2.37	1.28	.89	1.82
Total ..	5.40	2 68	6.73	3.55	6.50	5.59	15.92	14 08	17.35	15.27	11.95	14.91

Table No. 18.

Average Monthly and Annual Precipitation.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct	Nov.	Dec.	Annual.	Number of years record.
Corinne	1.27	1.26	1 29	1.12	1 12	.58	.44	.31	63	.84	1.07	1.80	11 73	24–26
Fillmore	1.47	1.68	1.65	2.25	1 11	.53	.51	.83	.98	.45	.73	1.41	13 60	6–8
Fort Duchesne	.38	.50	.71	.77	.79	.25	.48	.63	.60	24	.23	.77	6.35	6–8
Heber	2.89	2.16	2.15	1.01	.95	.35	.75	.61	1 08	.94	.80	3.28	16.97	3
Levan	1.63	1.83	2.33	2.22	2 07	.69	.40	.77	1.39	1.04	76	3.32	18.45	6–7
Loa	.57	.74	.63	.15	.33	.08	.87	1.08	.49	.46	.43	.45	6.28	4
Logan	1 55	1.52	2.05	1.12	2.06	.78	.27	.21	1.60	.36	.74	1.55	13.81	3–5
Moab	.68	.73	.86	.32	.33	.08	.64	.51	.72	.42	59	1.07	6.95	6–7
Ogden	1.65	1.51	1.57	1.47	1.49	.58	.25	.40	.68	1 42	1 12	1.88	14.02	24–26
Parowan	1.27	1.56	2.03	1.35	.95	.17	1.09	1.06	1 04	.71	.57	1.00	12.55	5
St. George	1.01	.91	.60	.27	.33	.03	.33	.29	.41	.31	.44	1.38	6.31	11–15
Salt Lake City	1.46	1.31	2.01	2.24	1.76	.78	.55	.75	.91	1.60	1.48	1.68	16 53	29–33
State Average	1.32	1.31	1.49	1.19	1.11	.41	55	.62	.88	.73	.75	1 63	11.96	

RAINFALL IN THE ARID STATES.

The territory embraced within the confines of Arizona, Colorado, Idaho, Montana, Nevada, Utah, and Wyoming constitutes the larger part of what is known as the arid region, where the rainfall during the growing months is so scanty as to make irrigation necessary in order to reclaim this great stretch of country from the desert, and make possible the raising of crops, and the existence of human life. The successful prosecution of agriculture here becomes a question of irrigation.

To show just how much dependence is to be placed upon artificial watering in the several arid states, the facts graphically illustrated in the following diagrams have been compiled. They represent the average rainfall of five years, ending with 1895, taken from the records of each state and territory for the months of May, June, July, and August. They give the average of all the weather stations of each of the states. In Colorado, for instance, there are some 80 stations, and the average of all these is taken, though the rainfall may vary considerably at the different stations; in Arizona there are about 40; in Utah there are some 30 stations; in Montana, 20; Nevada, 40; Wyoming, 12; Idaho, 20, though the number varies in different months and years, according to the completeness of the returns. Figure 7 shows the average monthly rainfall for the months of May, June, July, and August for the five years. Figure 8 shows the total average rainfall in inches for the four months. Table No. 19 gives the records in detail for each month and each year. These will afford an instructive study. The wide variation in the amount of rainfall in these arid states will be a surprise to many.

IS THE RAINFALL INCREASING?

The statement is frequently made that the rainfall is increasing in Utah and the arid states, due, as it is believed, to the influence of cultivation of the soil and the growth of forests. With a view to ascertaining the correctness of this view the following table has been compiled from records of precipitation at Salt Lake City. Ogden, and Corinne. The rainfall was first recorded at Salt Lake City in 1859, but up to 1873 the record is very incomplete. Since the latter date, there is a continuous record for each year to the present time, for the three cities mentioned. The total precipitation in inches is given for each year, and the average is given of the three cities in Table No. 20.

A close study of the table will reveal no ground for the belief that rainfall is increasing or the reverse. Taking the average in periods of ten years, 1876 to 1895 inclusive, we find the following: First period 13.72 inches; second period 13.89. There is an inappreciable increase in the last decade, not enough that another decade might not change to a decrease. In periods of five years beginning 1873 and ending 1892 inclusive, we have the following averages:

First period	16.63 inches.
Second period	12.10 "
Third "	14.68 "
Fourth "	15.27 "

Beginning with the year 1876 and ending with 1895, the average rainfall in periods of five years is as follows:

First period	12.49 inches.
Second period	14.96 "
Third "	13.20 "
Fourth "	14.58 "

TABLE NO. 20.

	Corinne.	Ogden.	Salt Lake City.	Average.
1859			18.27	
1861			20.99	
1864			23.87	
1865			22.67	
1866			38.20	
1871	14.38	10.99		
1872	10.92	6.54		
1873	16.20	15.73	32.95	21.60
1874	12.01	12.29	17.57	13.96
1875	17.03	20.69	23.64	20 45
1876	9.66	14.80	21.28	15.25
1877	5.41	13.95	16.35	11.90
1878	8.84	15.11	19.75	14.57
1879	7.50	12.35	13.11	10.99
1880	8.02	10.24	10.94	9.73
1881	12.94	10.53	16.88	13.45
1882	8.74	10.57	15.98	11.76
1883	10.01	10.98	14 24	11.74
1884	18.95	19.49	17.52	18.65
1885	16.54	19.40	21.69	19.21
1886	11.78	12.60	18.89	14.42
1887	7 31	9.14	11.66	9.37
1888	11.90	12.03	13.62	12 52
1889	14.56	16.91	18.46	16.64
1890	11.35	17.25	10.55	13.05
1891	17.79	23.12	15.92	18.94
1892	14.62	16.89	14 08	15.20
1893	12.61	15.63	17.35	15.20
1894	9.76	16.04	15.27	13.69
1895	7.45	10.25	11.95	9.88
Average	11.73	14.02	16.53	

EARLIEST AND LATEST FROSTS.

The following table gives the dates of the last frost in the spring, or early summer, as the case may be, and the first autumn frost, for three years, 1894, 1895, and 1896.

The minimum temperature of 32 degrees Fahrenheit is used to indicate the occurrence of frost, but the condition of the atmosphere in regard to moisture and wind may be such that frost will not be precipitated, or in other words a "killing" frost may not occur, at a temperature of 32 degrees; and, on the other hand, the conditions may be so favorable that frost will occur at a temperature higher than 32.

However, a study of the table will give a fairly accurate idea in regard to the occurrence of early and late frost at the several points.

TABLE No. 21.

	LAST FROST.			FIRST FROST.		
	1894	1895	1896	1894	1895	1896
Fillmore	June 12	June 17	May 19	Sept. 13	Sept. 22	Sept. 26
Ft. Duchesne	May	June 18		Sept. 14	Sept. 22	
Heber	June 9	June 17	June 11	Sept. 29	August 31	Sept. 10
Loa	June 6	June	June 11	Sept. 28	Sept.	Sept. 10
Logan	May 3	June 17	May 18	Sept. 13	Sept. 22	October 10
Moab	April	April 6	May 16	Oct. 29	Sept.	October 14
Parowan.....		June 1	May 18	Sept. 14	Sept. 22	Sept. 27
St. George....	May 15	April 6	May 15	October 29	Sept. 21	Sept. 27
Salt Lake City	April 28	April 5	May 15	October 28	Sept. 22	October 29

RELATIVE HUMIDITY.

Table showing the mean monthly and mean annual relative humidity at Salt Lake City, Utah, from January 1st, 1890, to December 31st, 1895, inclusive.

TABLE No. 22.

	Jan.	Feb.	Mch.	April	May	June.	July	Aug.	Sept.	Oct.	Nov.	Dec.	An'l.
1890	73	66	63	50	44	38	38	42	45	58	58	70	54
1891	71	74	64	52	47	49	42	44	50	54	65	72	57
1892	80	81	66	63	56	45	33	32	32	53	56	76	56
1893	77	75	64	49	47	34	34	37	37	50	64	72	53
1894	72	65	58	47	38	40	38	40	51	51	54	71	52
1895	73	73	56	43	46	41	35	33	43	54	72	77	54
Av.	74	72	62	52	46	41	37	38	43	53	61	73	55

WIND VELOCITY.

Table showing the mean monthly and mean annual velocity of the wind at Salt Lake City, Utah, in miles per hour, from January 1st, 1890, to December 31st, 1895.

TABLE No. 23.

	Jan.	Feb.	Mch.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	An'nal
1890	5.5	5.8	5.6	5.9	5.8	6.2	4.8	4.4	3.9	3.7	2.8	3.0	4.8
1891.....	3.6	6.4	4.4	5.2	5.7	5.7	4.9	5.4	6.8	5.1	4.5	5.9	5.2
1892....	3.3	3.2	6.6	5.5	5.3	6.3	6 8	5.9	6.0	5.1	7.5	4.9	5.5
1893	5.0	5.7	6.5	8.0	7.7	7.2	6.1	5.6	6.9	5.2	5.2	4.4	6.1
1894	5.6	6.4	7.1	6.9	7.2	6.7	5.6	5.9	6.1	5.9	4 4	5.6	6.1
1895	6.1	4 4	7.9	7.8	7.4	6.3	6 0	5.6	7.1	5.3	4.9	5.1	6.2
Average	4.7	6.3	6.3	6.5	6.5	6.4	5.7	5.5	6.1	5.1	4.9	4.8	5.6

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WEATHER FORECASTS.

The Experiment Station receives the telegraphic weather forecasts from the forecast official of the Department of Agriculture located at San Francisco. The forecasts are telegraphed each day (Sundays and holidays excepted) at government expense. The signal flags are displayed from the flag pole of the College in full view of the valley below. These forecasts or warnings are of great value to the farming community. Great value is placed upon them by the Department of Agriculture at Washington. From their timely warnings much property is saved both on sea and land. The Department considers that $10,000,000 is a conservative estimate of the value of property saved in 1895. Doubtless some means will be devised in the near future whereby these forecasts will be made more accessible to the farming community. An explanation of the flag signals is shown herewith.

RELATIVE HUMIDITY.

After the manuscript of this bulletin had been placed in the hands of the printers, the writer received a copy of a paper on "Some Climatic Features of the Arid Regions," communicated to the National Irrigation Congress held at Phœnix, Arizona, December 15-17, 1896, by Willis L. Moore, Chief of the United States Weather Bureau. The paper discussed the question of sensible temperature, and is a valuable contribution to the literature of this subject.

Through the courtesy of Professor Moore, I am enabled to insert herewith a chart, published in his paper, showing the mean relative humidity of summer throughout the United States. In connection with charts 2 and 3, it will afford an interesting study. It will be seen by a study of the three charts that in the region where the humidity is least the reduction of temperature by evaporation is greatest. This reduction is shown to be about five degrees in the vicinity of New York, and about twenty in the inter-mountain country.

Professor Moore explains that "the data used in preparing the chart were synchronous observations at 8 a. m. and 8 p. m., seventy-fifth meridian time, during the eight years 1889-96." The chart may, therefore, be taken as a very accurate representation of the actual humidity conditions of the United States.

This whole subject is one of far-reaching importance to the inter-mountain country. When the question of evaporation and its influence upon temperature is more fully understood, the results will be of great advantage not only to the material interests of the arid region, but to many people who would find in this climate complete immunity from ailments that afflict them in the humid climate of the East.

Mean Relative Humidity—Summer.

Chart III. (From observations at 8 a. m. and 8 p. m., 75th meridian time.)